Populations, Activity and Emissions of Diesel Nonroad Equipment in EPA Region 7

PEMS Data QC Results
Appendix Y

Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

Prepared for EPA by
Eastern Research Group, Inc. (ERG)
EPA Contract No. EP-C-06-080

United States Environmental Protection Agency

EPA-420-R-12-009
July 2012

Test ID	Associated Filenames	Phase	PEMS Test Date	Equipment Type	Manufacturer/Make	Model	Serial #
1688-1462	N/A, no test data	1	7/2/2007	Horizontal Boring Machine	Vermeer	Navigator D16x20A	
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	6/15/2007	Backhoe	John Deere	410B Turbo	
0685-1214	pp_0685_1214_070626.csv	1	6/26/2007	Grader	Komatsu	GD655-3C	
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	6/21/2007	Crawler Loader	Caterpillar	963C	
0008-1644	pp_0008_1644_070629.csv	1	6/29/2007	Backhoe	JC Bamford Excavators	210S Series 2	

Test ID	Associated Filenames	Phase	Model Year	RPM Data Status	RPM Cal Data?	Gaseous Data Status	Grav filters collected
1688-1462	N/A, no test data	1	2006	None	N/A	None	0
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	1983	No RPM Data	None	Valid Gaseous Data	0
0685-1214	pp_0685_1214_070626.csv	1	2005	Present	None	Present	0
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	2002	Invalid RPM Data	None	Partial	4 (3)
0008-1644	pp_0008_1644_070629.csv	1	1977	Invalid RPM Data	Yes	Valid Gaseous Data	0

Test ID	Associated Filenames	Phase	Field Comments
1688-1462	N/A, no test data	1	Attempted PEMS test on 7/2, equipment failed, no data. RS232 serial cable between MPS data logger and SEMTECH failed;
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	PM Grav system failed after 20 minutes. LCD display shook loose and shorted out, causing random filter switching.
0685-1214	pp_0685_1214_070626.csv	1	6/25 - Installed on grader. Testing began at approximately 7:15 AM on 6/26. No test data, equip problems, to attempt retest 6/28 canceled due to rain.
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	3rd filter solenoid not working, so 4 filters only.
0008-1644	pp_0008_1644_070629.csv	1	MPS flow sampler malfunctioned, but gaseous was collected.

Test ID	Associated Filenames	Phase	Sensors Data Review Comments
1688-1462	N/A, no test data	1	No test data
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	These are gaseous only, no PM or RPM. 20090608 C Ensfield comments: recovered test B (AM), Time aligned gaseous data with EFM.
0685-1214	pp_0685_1214_070626.csv	1	About 7 minutes of gaseous test data, which does contain RPM. Final processed by Sensors.
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	NDIR board failed so RPM, CO, CO2, & O2 readings during test are suspect . Some gaseous data, but has gaps. 2 filters in am, 2 in PM. 3rd filter was not working because solenoid was wired incorrectly; 20090608 C Ensfield comments: First test: gaseous valid; RPM dropout 3000 sec after eng start. Can estimate from Exhaust flow. Filter flow invalid for 1; 2 and 3 valid, but flows are not at setpoint. Second Test: NDIR intermittent, including RPM. Can fix RPM using exhuast flow. HC, Nox valid; CO, CO2 intermittent. MPS and Filters good. All data time aligned
0008-1644	pp_0008_1644_070629.csv	1	Gaseous OK, but only 15 minutes, no PM, only 1 test 20090608 C Ensfield comments: gaseous concentrations valid. No exhaust flow or mass calculations.

Test ID	Associated Filenames	Phase	Data location / status	Time Alignment	RPM Scaling	RPM spike corrections	RPM vs. flow
1688-1462	N/A, no test data	1	No data	N/A	N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	Final Rcvd	done	See SxS page	See SxS page	See SxS page
0685-1214	pp_0685_1214_070626.csv	1	Final Rcvd	done	See SxS page	See SxS page	See SxS page
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	Final Rcvd	done	See SxS page	See SxS page	See SxS page
0008-1644	pp_0008_1644_070629.csv	1	Final Rcvd	done	See SxS page	See SxS page	See SxS page

Test ID	Associated Filenames	Phase	Turbo noted?	Time Stamp Fix	Merge PAMS	Filter/autozero overlap?	BSFC Application	BSFC/Lug Curve Eqn Status
1688-1462	N/A, no test data	1		N/A	N/A	N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	Yes	Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
0685-1214	pp_0685_1214_070626.csv	1		Done	See SxS page	See SxS page	N/A	No eqn provided, but low priority, only 7 minutes of operational gaseous, no PM
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
0008-1644	pp_0008_1644_070629.csv	1		N/A	See SxS page	See SxS page	N/A	No eqn provided, but low priority, only 15 minutes of gaseous, no PM - D Hawkins table says JCB can't ID

Test ID	Associated Filenames	Phase	BSFC/Lug Curve Eqn Source	By-test MPS proportionality	Nox correction	Exh flow check	Flowmeter usage stats	Merge ECU data
1688-1462	N/A, no test data	1	N/A	Done	N/A	N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	spec. sheet (4045D) from J Deere website	Done	Rqd for all files	See SxS page	Done	See SxS page
0685-1214	pp_0685_1214_070626.csv	1	N/A	Done	Rqd	See SxS page	N/A	See SxS page
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	Cat CBI	Done	Rqd for both files	See SxS page	Done	See SxS page
0008-1644	pp_0008_1644_070629.csv	1	N/A	Done	Rqd	See SxS page	Done	See SxS page

Test ID	Associated Filenames	Phase	Flag invalid file sgmnts	Cal Data & Drift Check	MFC correction	Fuel props rcvd	Fuel props correction	Env cond correction	Filters updated on logs?
1688-1462	N/A, no test data	1	N/A	N/A	Not rqd	N/A	EPA to apply	EPA to apply	Yes
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0685-1214	pp_0685_1214_070626.csv	1	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0008-1644	pp_0008_1644_070629.csv	1	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes

Test ID	Associated Filenames	Phase	PEMS ID	Other Fixes Rqd?
1688-1462	N/A, no test data	1	D06-SDS06	N/A
2208-1918	pp_2208_1918_070615_A.csv pp_2208_1918_070615_B_fixed_Test-Added.csv pp_2208_1918_070615_C_Test_1.csv pp_2208_1918_070615_C_Test_2.csv	1	D06-SDS06	
0685-1214	pp_0685_1214_070626.csv	1	D06-SDS06	
0685-2214	pp_0685_2214_070621_A.csv pp_0685_2214_070621_B.csv	1	D06-SDS06	
0008-1644	pp_0008_1644_070629.csv	1	D06-SDS06	

Test ID	Associated Filenames	Phase	PEMS Test Date	Equipment Type	Manufacturer/Make	Model	Serial #
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	7/24/2007	Track/Crawler Loader	Caterpillar	953C	
0603-2702	N/A, ineligible facility	1	7/19/2007	Public Works	New Holland/Ford	555E-699000000	
3858_1482	pp_3858_1482_Test2.csv	2	9/18/2007	Crawler Dozer	Cat	D4CXL	
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	9/20/2007	Crawler Dozer	Cat	D4CXL	
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	9/21/2007	Wheeled Loader	Case	480FLL	
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	9/27/2007	Track dozer	Cat	D6RXL	
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	9/28/2007	Wheeled Front Loader	Deere	544H	PEMS Tests

Test ID	Associated Filenames	Phase	Model Year	RPM Data Status	RPM Cal Data?	Gaseous Data Status	Grav filters collected
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	2004	Valid RPM Data	Yes	Valid Gaseous Data	7
0603-2702	N/A, ineligible facility	1	Unk	Invalid RPM Data	None	Valid Gaseous Data	3
3858_1482	pp_3858_1482_Test2.csv	2	1996	Partial	No	Valid	3
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	1996	Partial	No	Valid	6
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	1992	Partial	Yes	Biased (zerod on exhaust)	4
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	1997	Partial	No	Valid	5
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	2003	Partial	Yes	Valid	5

Test ID	Associated Filenames	Phase	Field Comments
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	Installed 7/22 in evening, tested most of day 7/23. PM collected successfully.
0603-2702	N/A, ineligible facility	1	This is a "practice" test done at ineligible facility (gvmnt facility) to debug and confirm system during test break
3858_1482	pp_3858_1482_Test2.csv	2	3 filters obtained. After that, exhaust hose blew off and PEMS failed (around 9:30).
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	Test started fine, compressor stoped around 10:45 (after 3 filters), repaired at lunch for additional PM testing.
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	Operator started equipment at 9:10, idle until 11:15. 11:30, PEMS exhaust hose blew off, work stopped. Team reinstalled hose, work resumed at 11:37.
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	In AM, the exhaust hose melted and popped off after about 3 hours (3 filters obtained). Team acquired new hoses/connections at lunch, but these only worked for about 1/2 hour in afternoon 1 and 0.5 filters obtained.
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	

Test ID	Associated Filenames	Phase	Sensors Data Review Comments
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	Prelimary processing notes: "Wrong flowtube diameter & min dilution ratio entered but corrected during post-processing ". Is everything valid here? 20090608 C Ensfield comments: flowmeter diameter fixed. Time alignment complete. Needs RPM corrections based on EF. For test 1, filters 1 and 2 are ok; lost flow control on 3, but could still be used. PM OK on test 2.
0603-2702	N/A, ineligible facility	1	20090608 C Ensfield comments: site was invalid per ERG - did not produce final data
3858_1482	pp_3858_1482_Test2.csv	2	CE, 8/08: XML file submitted. Test1 CSV file submitted after time alignment and RPM scaling. No Test2. RPM valid only for portions of the test; need flow vs RPM relationship to estimated RPM where it is invalid. Completed this task in Excel file for review. MS, 9/08: Final rcvd., but timestamps seem to cycle thru 12:00 AM to 1:00 AM in csv (xls file is fine, so ERG can probably fix, or use GPS time).
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	CE; 8/08: XML file submitted. Test1 and Test2 CSV files submitted after time alignment and RPM scaling. RPM valid only for portions of the test; need flow vs RPM relationship to estimated RPM where it is invalid (if not turbo). Completed this task in Excel file for review. MS, 9/08: Final rcvd., but timestamps seem to cycle thru 12:00 AM to 1:00 AM in csv (xls file is fine, so ERG can probably fix or use GPS time).
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	test 1 all idle except 1st filter; MPS sample flow zero at idle, so filter 2, 3 invalid, afternoon filters ok. For both tests, gases were zeroed on exhaust (bad solenoid). May be able to salvage CE; 8/08: XML file submitted. Test1 and Test2 CSV files submitted after time alignment. RPM scaling OK, but RPM was only valid for portion of Test2 (no test 1 RPM). Needs flow vs RPM relationship to estimate RPM for remainder of data (if not turbo). To be performed in SAS.
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	CE; 8/08: Two XML data files submitted. Time aligned CSV files submitted for Test1 and Test2. Test 1 RPM OK (RPM scaling ok, although there are some spikes). Test 2 RPM data appears to be invalid, needs flow vs RPM relationship to estimate RPM for Test2 (if not turbo). To be performed in SAS.
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	CE; 8/08: XML data file submitted. Test1 and Test2 time aligned CSV files submitted. RPM scaling was ok. No test 1 RPM, so needs flow vs RPM relationship to estimate RPM for Test1 (if not turbo). Also, some RPM spikes for test 2, both issues to be corrected in SAS.

Test ID	Associated Filenames	Phase	Data location / status	Time Alignment	RPM Scaling	RPM spike corrections	RPM vs. flow
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	Final Rcvd	done	See SxS page	See SxS page	See SxS page
0603-2702	N/A, ineligible facility	1	Data to not be submitted, ineligible facility. Practice test only to debug equipment.	done	N/A	N/A	N/A
			Count for Phase 1				
3858_1482	pp_3858_1482_Test2.csv	2	Final Rcvd	Done	See SxS page	See SxS page	See SxS page
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	Final Rcvd	Done	See SxS page	See SxS page	See SxS page
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page

Test ID	Associated Filenames	Phase	Turbo noted?	Time Stamp Fix	Merge PAMS	Filter/autozero overlap?	BSFC Application	BSFC/Lug Curve Eqn Status
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
0603-2702	N/A, ineligible facility	1	N/A	N/A	N/A	N/A	N/A	Not rqd - Ineligible facility (public works, used as a testbed to work out problems)
3858_1482	pp_3858_1482_Test2.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2		Done	See SxS page	See SxS page	N/A	No eqn provided, but low priority, gaseous was zerod on exhaust
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	Yes	Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608

Test ID	Associated Filenames	Phase	BSFC/Lug Curve Eqn Source	By-test MPS proportionality	Nox correction	Exh flow check	Flowmeter usage stats	Merge ECU data
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	Cat CBI	Done	Rqd for both files	See SxS page	Done	See SxS page
0603-2702	N/A, ineligible facility	1	N/A	Done	N/A	N/A	N/A	N/A
3858_1482	pp_3858_1482_Test2.csv	2	Generic curve	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	Generic curve	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	N/A	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	Generic curve	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	spec. sheet (6068T) from J Deere website	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page

Test ID	Associated Filenames	Phase	Flag invalid file sgmnts	Cal Data & Drift Check	MFC correction	Fuel props rcvd	Fuel props correction	Env cond correction	Filters updated on logs?
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0603-2702	N/A, ineligible facility	1	N/A	N/A	N/A	N/A	N/A	N/A	Yes
3858_1482	pp_3858_1482_Test2.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes

Test ID	Associated Filenames	Phase	PEMS ID	Other Fixes Rqd?
0619-0968	pp_0619_0968_070724_Acorr.csv pp_0619_0968_070724_B.csv	1	D06-SDS06	
0603-2702	N/A, ineligible facility	1	N/A	N/A
3858_1482	pp_3858_1482_Test2.csv	2	D06-SDS06	
3858_1482_1	pp_3858_1482_1_Test1.csv pp_3858_1482_1_Test2.csv	2	D06-SDS06	
3858_5754	pp_3858_5754_Test1.csv pp_3858_5754_Test2.csv	2	D06-SDS06	
2523_0713	pp_2523_0713a_Test1.csv pp_2523_0713b_Test1.csv	2	D06-SDS06	
2523_6087	pp_2523_6087_Test1.csv pp_2523_6087_Test2.csv	2	D06-SDS06	

Test ID	Associated Filenames	Phase	PEMS Test Date	Equipment Type	Manufacturer/Make	Model	Serial #
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	10/2/2007	Excavator	Cat	325D	
3597_095k	pp_3597_095k_Test1.csv	2	10/4/2007	Roller Compactor	Hyster	C340C	
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	10/9/2007	Grader	Cat	12H	
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	10/11/2007	Well Driller	Cummins	4B-3.9	
3858_4862_1	pp_3858_4862_1_Test1.csv	2	10/13/2007	Forklift Truck	Cat	TH83	
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	10/15/2007	Forklift Truck	Cat	TH83	
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	10/24/2007	Tractor Loader	Case	570 LXT	
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	10/27/2007	Crawler Dozer	Deere	550H	
8925-2466	8925-2466a.csv 8925-2466b.csv	3	7/23/2008	Track Dozer	Caterpillar	953C	PEMS Tests

Test ID	Associated Filenames	Phase	Model Year	RPM Data Status	RPM Cal Data?	Gaseous Data Status	Grav filters collected
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	2006	No RPM Data	No	Valid	6
3597_095k	pp_3597_095k_Test1.csv	2	1997	Partial	Yes	No Gaseous Data	6
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	1996	Partial	Yes	No Gaseous Data	6
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	1987	Partial	Yes	Valid	6
3858_4862_1	pp_3858_4862_1_Test1.csv	2	2002	Invalid	Yes	Valid	0
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	2002	Valid	Yes	Valid	6
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	1997	Valid	Yes	Valid	6
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	1999	Partial	Yes	Valid	9
8925-2466	8925-2466a.csv 8925-2466b.csv	3	1999	Valid		Valid	6

Test ID	Associated Filenames	Phase	Field Comments
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	We were unable to get a Capelec RPM signal (stayed < 1000 regardless of engine RPM, appears to be picking up SEMTECH. Did correlation with exhaust flow instead.
3597_095k	pp_3597_095k_Test1.csv	2	Lost gaseous about 1 hour into test (still have grav and mass flow).
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	Lost some of 1st filter, 2 & 3 should be valid, 4-6 suspect due to air filter clogging. Faulty solenoid resulted in loss of gaseous.
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	O2 sensor not working during test. 6 filters collected. Operator started around 8:50. RPM lost in am, Capelec replaced in around 1:03, functioned but not calibrated
3858_4862_1	pp_3858_4862_1_Test1.csv	2	Team didn't turn on nitrogen bottle for filter switching, so no grav filters.
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	Testing appeard to go fine
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	
8925-2466	8925-2466a.csv 8925-2466b.csv	3	NDIR AMBII Bench quit about 1 hour into AM and 1 hour into PM, but 5 valid filters were collected (lost about 20% of 3rd filter). Gen ran out of fuel in am right after bench quit. Cat ET collected thru day, also valid optical RPM (until bench quit). HT2010 hose burned / abraided through. Muffler rust holes repaired night before seemed to hold.

Test ID	Associated Filenames	Phase	Sensors Data Review Comments
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	CE; 8/08: XML data file submitted. Test1 and Test2 time aligned CSV files submitted. No RPM for either test. Test notes indicate that flow vs RPM relationship may be available based on pre-test observations? If so, correction can be performed in SAS (if not turbo)
3597_095k	pp_3597_095k_Test1.csv	2	Faulty SEMTECH solenoid, no gaseous. CE; 8/08: XML file submitted. Test1 CSV file submitted after time alignment. RPM scaling was ok, but RPM is invalid at idle conditions and needs to be fixed.. Need flow vs RPM relationship to estimated RPM (if no turbo) where it is invalid. To be done in SAS. No Test2 data.
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	Vehicle problem with 2nd test (clogged air fliter). No gaseous (faulty solenoid). CE; 8/08: Two XML data files submitted. RPM scaling ok, although there are some spikes. Time aligned CSV files submitted for Test1 and Test2. Needs flow vs RPM relationship to estimate RPM for Test2 (if no turbo). To be performed in SAS.
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	CE; 8/08: XML file submitted. Two CSV files submitted after time alignment and RPM scaling. RPM on Test1 can perhaps be estimated using relationship of flow vs RPM on Test2 (if no turbo) (use install calibration data). To be done in SAS.
3858_4862_1	pp_3858_4862_1_Test1.csv	2	CE; 8/08: XML file sumbitted, and Test1 CSV file submitted after time alignment. RPM invalid MS Flow vs RPM correlation may be possible using RPM cal data (if no turbo).
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	CE; 8/08: Data resubmitted after time alignment. RPM scaling was ok. No further corrections required.
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	CE; 8/08: XML file submitted. Test1 and Test2 CVS files submitted after RPM scaling and time alignment. Test1 required a multiplier of 2, while Test2 required a multiplier of 1. Must have switched scales on the device. No further corrections required.
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	Filter 2 on test 2 did not switch on. CE; 8/08: XML file modified with new RPM scaler (2 vs 4 original) and resubmitted. Test2 CSV file submitted after time alignment and RPM scaling. Test1 CSV file time aligned. Need to establish flow vs RPM relationship to estimate RPM on Test1. To be done in SAS.
8925-2466	8925-2466a.csv 8925-2466b.csv	3	C Ensfield 7/30 email: RPM appears to be scaled correctly. Data is time-aligned, no more work should be needed. PEMS file has 2426, rather than 2466, as file ID. Should be 2466. C Ens: 54 mins of gaseous in am, cut out during 3rd filter, 73 mins of gaseous in pm, includes all 3 filters. RPM valid in am and pm.

Test ID	Associated Filenames	Phase	Data location / status	Time Alignment	RPM Scaling	RPM spike corrections	RPM vs. flow
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3597_095k	pp_3597_095k_Test1.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3858_4862_1	pp_3858_4862_1_Test1.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	Final rcvd. MS found missing 3rd test 5/5/09, SF needs to import this into SAS.	Done	See SxS page	See SxS page	See SxS page
			Count of still rqd for Phase 2 (13 total)	Done	Done	3	10
8925-2466	8925-2466a.csv 8925-2466b.csv	3	Final rcvd. App Y PEMS Data QC Results_rev2011.xls	Done	See SxS page	See SxS page	See SxS page

Test ID	Associated Filenames	Phase	Turbo noted?	Time Stamp Fix	Merge PAMS	Filter/autozero overlap?	BSFC Application	BSFC/Lug Curve Eqn Status
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
3597_095k	pp_3597_095k_Test1.csv	2		Done	See SxS page	See SxS page	N/A	No eqn provided, but low priority, no gaseous data
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
3858_4862_1	pp_3858_4862_1_Test1.csv	2		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2		Done	See SxS page	See SxS page	Done	Cat provided data, Bob provided eqn 5/11/09
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2		Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
				Unk	4	Unk		
8925-2466	8925-2466a.csv 8925-2466b.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09

Test ID	Associated Filenames	Phase	BSFC/Lug Curve Eqn Source	By-test MPS proportionality	Nox correction	Exh flow check	Flowmeter usage stats	Merge ECU data
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	Cat CBI	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3597_095k	pp_3597_095k_Test1.csv	2	N/A	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	Cat CBI	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	H.Chen, J.Wang, S.Shuai, W.Chen, "Study of oxygenated biomass fuel blends on a diesel engine", Fuel 87 (2008) 3462–3468 (State Key Laboratory of Automotive Safety and Energy, Tsinghua University, Beijing 100084, China)	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3858_4862_1	pp_3858_4862_1_Test1.csv	2	Cat CBI	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	Cat CBI	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	Generic curve	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	spec. sheet (4045T) from J Deere website	Done	Done (20090602)	See SxS page	Done (20090602)	See SxS page
8925-2466	8925-2466a.csv 8925-2466b.csv	3	Cat CBI	Done	Not Rqd	See SxS page	Done	See SxS page

Test ID	Associated Filenames	Phase	Flag invalid file sgmnts	Cal Data & Drift Check	MFC correction	Fuel props rcvd	Fuel props correction	Env cond correction	Filters updated on logs?
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3597_095k	pp_3597_095k_Test1.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3858_4862_1	pp_3858_4862_1_Test1.csv	2	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8925-2466	8925-2466a.csv 8925-2466b.csv	3	See SxS page	Not avail (NDIR bench died)	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes

Test ID	Associated Filenames	Phase	PEMS ID	Other Fixes Rqd?
2523_0210	2523_0210_Test 1.csv 2523_0210_Test 2.csv	2	D06-SDS06	
3597_095k	pp_3597_095k_Test1.csv	2	D06-SDS06	
3597_0726	pp_3597_0726a_Test1.csv pp_3597_0726a_Test2.csv pp_3597_0726b_Test1.csv	2	D06-SDS06	
2745_1190	pp_2745_1190_Test1.csv pp_2745_1190_Test3.csv	2	G05-SDS02	
3858_4862_1	pp_3858_4862_1_Test1.csv	2	G05-SDS02	
3858_4862_2	pp_3858_4862_2_Test1.csv pp_3858_4862_2_Test2.csv pp_3858_4862_2_Test3.csv pp_3858_4862_2_Test4.csv	2	G05-SDS02	
3597-4734	pp_3597-4734_Test1.csv pp_3597-4734_Test2.csv	2	G05-SDS02	
3597_9706	pp_3597_9706_Test1.csv pp_3597_9706_Test2.csv pp_3597_9706_Test3.csv	2	G05-SDS02	
8925-2466	8925-2466a.csv 8925-2466b.csv	3	G05-SDS02	Merged the ECU data from: T:\Ntnl PEMS\Nonroad Data and Photos\Project Data\Phase 3 PEMS Data\Screenshots and Data from ET_Ph 3\CatET_Files\8925_2466 Cat ET

Test ID	Associated Filenames	Phase	PEMS Test Date	Equipment Type	Manufacturer/Make	Model	Serial #
9960-6086 (no data)	N/A	3	7/25/2008 - 7/28/2008	Articulated Loader	Komatsu	WA180	
0229-3781	0229-3781.csv	3	7/31/2008	Excavator	Case	1085B	
0229-0045	0229-0045.csv	3	8/1/2008	Backhoe	John Deere	410D Turbo	
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	8/5/2008	Articulated Loader	Komatsu	WA180	
9960-5674	9960-5674a.csv 9960-5764b.csv	3	8/6/2008	Excavator	Komatsu	PC300LC	
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	8/12/2008	Excavator	John Deere	450D	
8391-3333_2	8391-3333_2.csv	3	8/13/2008	Excavator	John Deere	450D	
8418-0097_1	8418-0097_1.csv	3	8/18/2008	Track Dozer	Caterpillar	963CB	
8418-0097_2	8418-0097_2.csv	3	8/19/2008	Track Dozer	Caterpillar	963CB	
8418-0377_1	8418-0377_1.csv	3	8/22/2008	Track Dozer	Caterpillar	963	
8418-0961	8418-0961.csv	3	8/25/2008	Excavator	Komatsu	PC300LC-6LC	PEMS Tests

Test ID	Associated Filenames	Phase	Model Year	RPM Data Status	RPM Cal Data?	Gaseous Data Status	Grav filters collected
9960-6086 (no data)	N/A	3	Unk	N/A	N/A	N/A	N/A
0229-3781	0229-3781.csv	3	1985	Valid		Valid	3
0229-0045	0229-0045.csv	3	1995	Valid		Valid	3
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	Unk	Valid		Valid	8
9960-5674	9960-5674a.csv 9960-5764b.csv	3	Unk	Valid		Valid	6
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	Unk	Valid		Valid	0
8391-3333_2	8391-3333_2.csv	3	Unk	No RPM Data		Partial	0
8418-0097_1	8418-0097_1.csv	3	1995	Valid		Valid	2 (1)
8418-0097_2	8418-0097_2.csv	3	1995	Valid		Valid	3
8418-0377_1	8418-0377_1.csv	3	1985	Valid		Valid	1 (0)
8418-0961	8418-0961.csv	3	1998	Partial	No	Valid	3 (1)

Test ID	Associated Filenames	Phase	Field Comments
9960-6086 **(no data)**	N/A	3	Install Thurs (7/24) for test next day, but site was rained out Friday. Left equip on over weekend. Monday, AMBII NDIR board would not communicate and compressor would not run (fried ground wire). Removed equipment with no data.
0229-3781	0229-3781.csv	3	Could not get access night prior, so they installed Thurs for testing Thurs, got 3 filters, quite a bit of idle and just a little usage. Only about 1 hour or so of testing.
0229-0045	0229-0045.csv	3	Install Friday for test Friday. Short test (equipment was not used much).
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	Got 8 filters on this one.
9960-5674	9960-5674a.csv 9960-5764b.csv	3	Got 6 filters on this one.
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	Mechanic started equipment early, ran for a couple minutes, then off, before we started collecting data. Exhaust hose burned paint on top of Deere. MPS hose in PMES rack was kinked, so no PM was collected (no MPS sample flow and filters were clean). Discarded filters. Fixed kinked hose in PM after test, left PEMS on for test next day. Gaseous and RPM appears OK. No Dearborn box connector for ECU data.
8391-3333_2	8391-3333_2.csv	3	Retest in order to try to get gaseous & PM data. No Dearborn box connector for ECU data. Equipment sat unused until around 9:55 am, then started. When it started, no CO, CO2, or O2 readings or RPM (SEMTECH AMBII / NDIR bench failed). Also, no PM was collected (vacuum line to grav sampler was soft rubber without a compression ferrule and pulled out of grav sampler) . PEMS removed and repaired over next day. C Ensfield looked over last week's data and confirmed the line was connected at that time (good).
8418-0097_1	8418-0097_1.csv	3	PEMS seemed to operate fine, then SEMTECH died about 30 minutes into test (obtained 1st filter, part of 2nd filter). 2nd filter was timed, so may be salvaged. Sensors pulled SEMTECH from PEMS rack, replaced it with other SEMTECH (after replacing interface board on AMBII-2 NDIR bench). Diagnosis of "dead" SEMTECH shows breaker in SEMTECH appears to have been flipped due to rough usage (mechanical, not electrical).
8418-0097_2	8418-0097_2.csv	3	System seemed to function well, all three filters obtained, then another hour or so of sampling (about 2 hours total) before hose either blew off or melted / slid off of flow meter tube. White boot also melted on tailpipe. Tailpipe was about 3.5 inches, so a 4" exhaust hose and flowmeter were used. Team removed PEMS to prepare for install on new equipment for next morning, as rain is coming tomorrow afternoon.
8418-0377_1	8418-0377_1.csv	3	PEMS seemed to be functioning, so re-installed 8/21 in evening. About 9 minutes into test, the grav sampler again began malfunctioning (drawing too much sample), and then one minute later the entire PEMS rack died (again appears to be a faulty main circuit breaker). PEMS was removed for repairs over weekend. NOTE: This Cat 963 was not previously inventoried.
8418-0961	8418-0961.csv	3	Lost optical RPM early into test. Test ran thru day, only 3 grav filters because team couldn't access filter assembly at lunch. However, after test, the silicon boot to tailpipe was found to have burned and released sooty gunk, clogging the grav sample dilution line, preventing a full sample from reaching the 3rd filter, and possibly invalidating the 1st 2 filters due to excessive PM from the burning boot. We got a full day of gaseous (sans RPM). No Detstch connector. No RPM cal. Could not get oil sample

Test ID	Associated Filenames	Phase	Sensors Data Review Comments
9960-6086 **(no data)**	N/A	3	No test data.
0229-3781	0229-3781.csv	3	C Ensfield 7/31 email: RPM OK but has noise spikes during extended idle period, need to be filtered in SAS.
0229-0045	0229-0045.csv	3	RPM is OK but has noise spikes.
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	3 tests conducted. 1st test had 3 filters, second test had two filters, third had 3. RPM is OK but has noise spikes during Tests 1 and 2.
9960-5674	9960-5674a.csv 9960-5764b.csv	3	RPM is OK in both Tests 1 and 2.
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	last portion of first data file deleted - MPS data scrambled. RPM is OK in both Tests 1 and 2. Gaseous data OK but no PM in this test.
8391-3333_2	8391-3333_2.csv	3	No RPM, no PM - Gaseous doesn't have NDIR (CO, CO2, or O2).
8418-0097_1	8418-0097_1.csv	3	Breaker opened 5 minutes into filter 2, so there will not be enough data to measure work for filter 2. Only 30 minutes of data (RPM, gaseous, and one valid filter).
8418-0097_2	8418-0097_2.csv	3	Data appears okay. Hose failure seems to have occurred after file was stopped.
8418-0377_1	8418-0377_1.csv	3	One partial cold start filter, but filter flowrate was unstable. Use with caution. Scaled RPM 2:1 based on pre-test data. RPM OK.
8418-0961	8418-0961.csv	3	CE: exhaust temperatures were cool for 1st filter, but exceeded 430 C on 2nd filter, which we have to assume is when the boot melted. Do no use filters 2 and 3. Gaseous looks OK. RPM ok for 6600 sec.

Test ID	Associated Filenames	Phase	Data location / status	Time Alignment	RPM Scaling	RPM spike corrections	RPM vs. flow
9960-6086 (no data)	N/A	3	No data	N/A	See SxS page	See SxS page	See SxS page
0229-3781	0229-3781.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
0229-0045	0229-0045.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9960-5674	9960-5674a.csv 9960-5764b.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8391-3333_2	8391-3333_2.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8418-0097_1	8418-0097_1.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8418-0097_2	8418-0097_2.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8418-0377_1	8418-0377_1.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
8418-0961	8418-0961.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page

Test ID	Associated Filenames	Phase	Turbo noted?	Time Stamp Fix	Merge PAMS	Filter/autozero overlap?	BSFC Application	BSFC/Lug Curve Eqn Status
9960-6086 **(no data)**	N/A	3	Yes	N/A	See SxS page	See SxS page	N/A	Rcvd eqn from Bob 2/26/09
0229-3781	0229-3781.csv	3	Yes	Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
0229-0045	0229-0045.csv	3	Yes	Done	See SxS page	See SxS page	Done	Bob G provided eqn 20090608
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
9960-5674	9960-5674a.csv 9960-5764b.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
8391-3333_2	8391-3333_2.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
8418-0097_1	8418-0097_1.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
8418-0097_2	8418-0097_2.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
8418-0377_1	8418-0377_1.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/6/09
8418-0961	8418-0961.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09

Test ID	Associated Filenames	Phase	BSFC/Lug Curve Eqn Source	By-test MPS proportionality	Nox correction	Exh flow check	Flowmeter usage stats	Merge ECU data
9960-6086 (no data)	N/A	3	Generic curve	Done	N/A	See SxS page	Done	See SxS page
0229-3781	0229-3781.csv	3	Generic curve	Done	Not Rqd	See SxS page	Done	See SxS page
0229-0045	0229-0045.csv	3	spec. sheet (4045T) from J Deere website	Done	Not Rqd	See SxS page	Done	See SxS page
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	Generic curve	Done	Not Rqd	See SxS page	Done	See SxS page
9960-5674	9960-5674a.csv 9960-5764b.csv	3	Generic curve	Done	Not Rqd	See SxS page	Done	See SxS page
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	Spec sheet from Isuzu website	Done	Not Rqd	See SxS page	Done	See SxS page
8391-3333_2	8391-3333_2.csv	3	Spec sheet from Isuzu website	Done	Not Rqd	See SxS page	Done	See SxS page
8418-0097_1	8418-0097_1.csv	3	Cat CBI	Done	Not Rqd	See SxS page	Done	See SxS page
8418-0097_2	8418-0097_2.csv	3	Cat CBI, different serial #	Done	Not Rqd	See SxS page	Done	See SxS page
8418-0377_1	8418-0377_1.csv	3	Cat CBI, different model tho	Done	Not Rqd	See SxS page	Done	See SxS page
8418-0961	8418-0961.csv	3	Generic curve	Done	Not Rqd	See SxS page	Done	See SxS page

Test ID	Associated Filenames	Phase	Flag invalid file sgmnts	Cal Data & Drift Check	MFC correction	Fuel props rcvd	Fuel props correction	Env cond correction	Filters updated on logs?
9960-6086 **(no data)**	N/A	3	See SxS page	N/A	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0229-3781	0229-3781.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0229-0045	0229-0045.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
9960-5674	9960-5674a.csv 9960-5764b.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8391-3333_2	8391-3333_2.csv	3	See SxS page	Done	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8418-0097_1	8418-0097_1.csv	3	See SxS page	PEMS died, no post-test span	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8418-0097_2	8418-0097_2.csv	3	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8418-0377_1	8418-0377_1.csv	3	See SxS page	PEMS died, no post-test span	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
8418-0961	8418-0961.csv	3	See SxS page	Provided, but no post-test span in data	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes

Test ID	Associated Filenames	Phase	PEMS ID	Other Fixes Rqd?
9960-6086 **(no data)**	N/A	3		
0229-3781	0229-3781.csv	3	G05-SDS02	
0229-0045	0229-0045.csv	3	G05-SDS02	
9960-6086	9960_6086a.csv 9960_6086b.csv 9960-6086c.csv	3	G05-SDS02	
9960-5674	9960-5674a.csv 9960-5764b.csv	3	G05-SDS02	
8391-3333_1	8391-3333_1A.csv 8391-3333_1B.csv	3	G05-SDS02	
8391-3333_2	8391-3333_2.csv	3	G05-SDS02	
8418-0097_1	8418-0097_1.csv	3	D06-SDS01	
8418-0097_2	8418-0097_2.csv	3	G05-SDS02	
8418-0377_1	8418-0377_1.csv	3	D06-SDS01	
8418-0961	8418-0961.csv	3	G05-SDS02	

Test ID	Associated Filenames	Phase	PEMS Test Date	Equipment Type	Manufacturer/Make	Model	Serial #
8418-0377_2	N/A	3	8/26/2008	Track Dozer	Caterpillar	963	
0349-1836	0349-1836.csv	3	9/23/2008	Track Dozer	Caterpillar	953	
0349-2422	0349-2422.csv	3	9/24/2008	Excavator	Caterpillar	320B	
9272-3481	9272-3481A.csv 9272-3481B.csv	3	9/30/2008	Excavator	Komatsu	PC400LC	
9272-2494_1	9272-2494_1.csv	3	10/1/2008	Track Dozer	Caterpillar	963B	
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	10/2/2008	Track Dozer	Caterpillar	963B	
9272-0853	9272-0853.csv 9272-0853A.csv	3	10/6/2008	Excavator	Komatsu	PC400LC	
0062-0748	0062-0748.csv 0062-0748A.csv	3	10/9/2008	Backhoe Loader	John Deere	310J	
0062-6092	0062-6092A.csv 0062-6092B.csv	3	10/10/2008	Backhoe Loader	John Deere	310G	

Test ID	Associated Filenames	Phase	Model Year	RPM Data Status	RPM Cal Data?	Gaseous Data Status	Grav filters collected
8418-0377_2	N/A	3	1985	N/A	N/A	N/A	0
0349-1836	0349-1836.csv	3	1988	Valid		Valid	3
0349-2422	0349-2422.csv	3	1997	Valid		Valid	3
9272-3481	9272-3481A.csv 9272-3481B.csv	3	2000	Valid		Valid	6
9272-2494_1	9272-2494_1.csv	3	1998	Valid		Valid	2 (1)
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	1998	Partial		Valid	6
9272-0853	9272-0853.csv 9272-0853A.csv	3	1993	Valid		Valid	3
0062-0748	0062-0748.csv 0062-0748A.csv	3	2007	Valid		Valid	8 (7)
0062-6092	0062-6092A.csv 0062-6092B.csv	3	2006	Partial		Partial	6

Test ID	Associated Filenames	Phase	Field Comments
8418-0377_2	N/A	3	Lost grav shortly into test. FID was turned off to conserve FID fuel (all other FID fuels are contaminated). NOTE: This Cat 963 was not previously inventoried.
0349-1836	0349-1836.csv	3	Short test (approx 1.5 hours, 3 filters) - SEMTECH reboot required after test started
0349-2422	0349-2422.csv	3	Short test (3-4:45 PM) in afternoon, 3 filters
9272-3481	9272-3481A.csv 9272-3481B.csv	3	No apparent issues
9272-2494_1	9272-2494_1.csv	3	PEMS shut down approx 15 mintues into test (filter 2). Breaker flipped, and battery mount broke. Repaired in field, reinstalled.
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	Gen ran out of fuel at 8:30, restarted SEMTECH. Collected 6 filters before noon, then grav system failed around noon. System removed and repaired.
9272-0853	9272-0853.csv 9272-0853A.csv	3	Successfully collected 3 filters in AM before grav system failed, gaseous in PM until rain at 3:00 PM
0062-0748	0062-0748.csv 0062-0748A.csv	3	Grav sampler lost communication during 8th filter, all else appeared OK
0062-6092	0062-6092A.csv 0062-6092B.csv	3	No NDIR (RPM, CO, CO2, or oxygen) in AM testing. Everything functioned during short (approx 1.5 hr) afternoon session, filters manually switched. MPS failed during last filter.

Test ID	Associated Filenames	Phase	Sensors Data Review Comments
8418-0377_2	N/A	3	Filters were voided - Test file is missing. No test data available for this test.
0349-1836	0349-1836.csv	3	Gaseous, RPM and PM OK.
0349-2422	0349-2422.csv	3	Gaseous, RPM and PM OK.
9272-3481	9272-3481A.csv 9272-3481B.csv	3	scaled RPM for both tests per pre-test calibration notes, 3 filters for 1st test, 3 filters for 2nd test. Gaseous and RPM appear OK.
9272-2494_1	9272-2494_1.csv	3	Filter 2 probably unusable. Gaseous and RPM OK for short test.
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	3 filters in first test, 3 in second. Gaseous OK. RPM OK for test 1, partial for test 2.
9272-0853	9272-0853.csv 9272-0853A.csv	3	RPM OK for Test 1, no RPM for test 2. Gaseous OK for test 1, only 10 minutes into Test 2. 3 filters for Test 1, none for Test 2. Basically, Test 1 is fine, disregard test 2.
0062-0748	0062-0748.csv 0062-0748A.csv	3	7 filters okay; lost comms on 8th filter; all else good. Gaseous and RPM OK for both tests.
0062-6092	0062-6092A.csv 0062-6092B.csv	3	3 filters in Test 1 (AM Test), 2 filters in Test 2 (PM Test), lost comms to grav system during filter 3 in PM test. No NDIR in AM (no RPM, CO, CO2 or O2), gaseous and RPM OK for Test 2 (PM test).

Test ID	Associated Filenames	Phase	Data location / status	Time Alignment	RPM Scaling	RPM spike corrections	RPM vs. flow
8418-0377_2	N/A	3	No data	N/A	See SxS page	See SxS page	See SxS page
0349-1836	0349-1836.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
0349-2422	0349-2422.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9272-3481	9272-3481A.csv 9272-3481B.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9272-2494_1	9272-2494_1.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
9272-0853	9272-0853.csv 9272-0853A.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
0062-0748	0062-0748.csv 0062-0748A.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page
0062-6092	0062-6092A.csv 0062-6092B.csv	3	Final rcvd.	Done	See SxS page	See SxS page	See SxS page

Test ID	Associated Filenames	Phase	Turbo noted?	Time Stamp Fix	Merge PAMS	Filter/autozero overlap?	BSFC Application	BSFC/Lug Curve Eqn Status
8418-0377_2	N/A	3		N/A	See SxS page	See SxS page	N/A	Rcvd eqn from Bob 2/6/09
0349-1836	0349-1836.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
0349-2422	0349-2422.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
9272-3481	9272-3481A.csv 9272-3481B.csv	3	Yes	Done	See SxS page	See SxS page	Done	Used eqn from 9272-0853 (Komatsu PC400LC)
9272-2494_1	9272-2494_1.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 3/4/09
9272-0853	9272-0853.csv 9272-0853A.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
0062-0748	0062-0748.csv 0062-0748A.csv	3	Yes	Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09
0062-6092	0062-6092A.csv 0062-6092B.csv	3		Done	See SxS page	See SxS page	Done	Rcvd eqn from Bob 2/26/09

Test ID	Associated Filenames	Phase	BSFC/Lug Curve Eqn Source	By-test MPS proportionality	Nox correction	Exh flow check	Flowmeter usage stats	Merge ECU data
8418-0377_2	N/A	3	Cat CBI, different model tho	Done	N/A	See SxS page	Done	See SxS page
0349-1836	0349-1836.csv	3	Cat CBI, different serial #	Done	Not Rqd	See SxS page	Done	See SxS page
0349-2422	0349-2422.csv	3	Cat CBI, different model tho	Done	Not Rqd	See SxS page	Done	See SxS page
9272-3481	9272-3481A.csv 9272-3481B.csv	3	used 9272_0853	Done	Not Rqd	See SxS page	Done	See SxS page
9272-2494_1	9272-2494_1.csv	3	Cat CBI, different model tho	Done	Not Rqd	See SxS page	Done	See SxS page
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	Cat CBI, different model tho	Done	Not Rqd	See SxS page	Done	See SxS page
9272-0853	9272-0853.csv 9272-0853A.csv	3	Generic curve	Done	Applied to both files	See SxS page	Done	See SxS page
0062-0748	0062-0748.csv 0062-0748A.csv	3	spec. sheet (4045T tier2 engine) from J Deere website	Done	Applied to both files	See SxS page	Done	See SxS page
0062-6092	0062-6092A.csv 0062-6092B.csv	3	spec. sheet (4045T tier2 engine) from J Deere website	Done	Applied to both files	See SxS page	Done	See SxS page

Test ID	Associated Filenames	Phase	Flag invalid file sgmnts	Cal Data & Drift Check	MFC correction	Fuel props rcvd	Fuel props correction	Env cond correction	Filters updated on logs?
8418-0377_2	N/A	3	See SxS page	N/A (no test file)	Not rqd	Not tracking	EPA to apply	EPA to apply	Yes
0349-1836	0349-1836.csv	3	See SxS page	Done	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
0349-2422	0349-2422.csv	3	See SxS page	Done	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
9272-3481	9272-3481A.csv 9272-3481B.csv	3	See SxS page	Done	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
9272-2494_1	9272-2494_1.csv	3	See SxS page	PEMS died, no post-test span	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	See SxS page	Provided, but no post-test span in data	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
9272-0853	9272-0853.csv 9272-0853A.csv	3	See SxS page	Provided, but no post-test span in data	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
0062-0748	0062-0748.csv 0062-0748A.csv	3	See SxS page	Done	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes
0062-6092	0062-6092A.csv 0062-6092B.csv	3	See SxS page	Provided, but no post-test span in data	N/A, factor irrelevant	Not tracking	EPA to apply	EPA to apply	Yes

Test ID	Associated Filenames	Phase	PEMS ID	Other Fixes Rqd?
8418-0377_2	N/A	3		
0349-1836	0349-1836.csv	3	D06-SDS01	
0349-2422	0349-2422.csv	3	D06-SDS01	
9272-3481	9272-3481A.csv 9272-3481B.csv	3	D06-SDS01	
9272-2494_1	9272-2494_1.csv	3	D06-SDS01	
9272-2494_2	9272-2494_2A.csv 9272-2494_2B.csv	3	D06-SDS01	
9272-0853	9272-0853.csv 9272-0853A.csv	3	G05-SDS02	
0062-0748	0062-0748.csv 0062-0748A.csv	3	G05-SDS02	
0062-6092	0062-6092A.csv 0062-6092B.csv	3	G05-SDS02	

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
1688-1462	N/A, on test data	1				0	
2208-1918	pp_2208_1918_070615_A.csv	1				0	
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1					
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1		Test _C_Test 1, filter 1 (voided anyway)			
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1					
0685-1214	pp_0685_1214_070626.csv	1				210	740
0685-2214	pp_0685_2214_070621_A.csv	1		Test A, filters 1,2&3 (filters 1&3 already void)		150	640
0685-2214	pp_0685_2214_070621_B.csv	1	Test B, Filters 1, 2, and 3 (filter 3 already voided)	Test B, filter 3 (filter 3 voided already)			
0008-1644	pp_0008_1644_070629.csv	1				190	850
0619-0968	pp_0619_0968_070724_Acorr.csv	1		Test A, filters 2 and 3		190	850

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
1688-1462	N/A, on test data	1				3.3	60	0	
2208-1918	pp_2208_1918_070615_A.csv	1						0	
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1							
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1							
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1							
0685-1214	pp_0685_1214_070626.csv	1	210	740	740			0	
0685-2214	pp_0685_2214_070621_A.csv	1	150	640	640	6.6	110	117	22%
0685-2214	pp_0685_2214_070621_B.csv	1							
0008-1644	pp_0008_1644_070629.csv	1	190	1000	1000			0	
0619-0968	pp_0619_0968_070724_Acorr.csv	1	190	850	850			0	

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
1688-1462	N/A, on test data	1			3.3	565	0				
2208-1918	pp_2208_1918_070615_A.csv	1					0		N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1							N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1							N/A	N/A	N/A
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1							N/A	N/A	N/A
0685-1214	pp_0685_1214_070626.csv	1	675	2145			0		OK	No	No
0685-2214	pp_0685_2214_070621_A.csv	1	875	1720	6.6	942	540	38%	OK	Yes	Yes
0685-2214	pp_0685_2214_070621_B.csv	1							OK	No	No
0008-1644	pp_0008_1644_070629.csv	1	800	2400			0		N/A	No	Yes
0619-0968	pp_0619_0968_070724_Acorr.csv	1	800	2400			0		OK	Yes	No

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
1688-1462	N/A, on test data	1			Yes	Yes	N/A
2208-1918	pp_2208_1918_070615_A.csv	1	N/A		No	N/A	Not possible. PAMS wasn't operational until after PEMS test, and no RPM was collected during PEMS.
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1	N/A		No	N/A	Not possible. PAMS wasn't operational until after PEMS test, and no RPM was collected during PEMS.
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1	N/A		No	N/A	Not possible. PAMS wasn't operational until after PEMS test, and no RPM was collected during PEMS.
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1	N/A		No	N/A	Not possible. PAMS wasn't operational until after PEMS test, and no RPM was collected during PEMS.
0685-1214	pp_0685_1214_070626.csv	1	No		No	No	For Obs 0 - 990, set RPM = 0. For remainder of test, RPM appears OK
0685-2214	pp_0685_2214_070621_A.csv	1	Yes		No	Yes	if Ex > 300 kg/hr, RPM = 2.2 X Ex else RPM = 4.1 x Ex Also, if Ex < 20, RPM = 0
0685-2214	pp_0685_2214_070621_B.csv	1	Yes		No	Yes	Use RPM factor from Test A.
0008-1644	pp_0008_1644_070629.csv	1	No			N/A	Exhaust is intermittent and cannot be used for RPM.
0619-0968	pp_0619_0968_070724_Acorr.csv	1	No			No	if Ex < 20, RPM = 0, otherwise, rpm appears valid.

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
1688-1462	N/A, on test data	1		
2208-1918	pp_2208_1918_070615_A.csv	1	N/A	N/A
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1	N/A	N/A
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1	N/A	N/A
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1	N/A	N/A
0685-1214	pp_0685_1214_070626.csv	1	N/A	0 - 990
0685-2214	pp_0685_2214_070621_A.csv	1	Obs 9510 - 10,900	Obs 0 - 9509, 10,901 - end
0685-2214	pp_0685_2214_070621_B.csv	1	Test A	Entire test
0008-1644	pp_0008_1644_070629.csv	1	No valid RPM in this session.	N/A
0619-0968	pp_0619_0968_070724_Acorr.csv	1	N/A	entire test

Test ID	Associated Filenames	Phase	General Review Comments
1688-1462	N/A, on test data	1	
2208-1918	pp_2208_1918_070615_A.csv	1	No RPM, no correlation between exhaust and RPM, and no PAMS. Backpressure low (< 0.2 kpa). Only about 8 minutes of data. No PM, so no review of PM sampling parameters. SEMTECH sample pressures low (between 550 and 650 mbar).
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1	No RPM, no correlation between exhaust and RPM, and no PAMS. Nox concentrations high (NO up to around 1900 PPM). No HC data from obs 2170 thru 4330, approx. Data beyond ob 9600 is invalid. No PM, so no review of PM sampling parameters.
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1	No RPM, no correlation between exhaust and RPM, and no PAMS. THC values missing for a portion, but this is when engine is off, so the missing data is inconsequential. Short test (about 28 minutes). No RPM. Nox high. Exhaust backpressure values negative for much of the test (no PM sampling, tho). Since no PM, no review of other PM sampling parameters. SEMTECH system pressure drop down below 700 mbar.
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1	No RPM, no correlation between exhaust and RPM, and no PAMS. Nox high (1600 PPM), SEMTECH pressures below 700 mbar. No RPM. Exhaust backpressure values negative for part of the test (no PM sampling, tho). Since no PM, no review of other PM sampling parameters.
0685-1214	pp_0685_1214_070626.csv	1	Engine off from obs 0 - 990, and exhaust mass flow rate invalid (between 0 kg/hr and 50 kg/hr, erratic). Gaseous from engine start (around 990) thru end (around 1405) looks valid. No PM sampling, so no review of PM sampling parameters.
0685-2214	pp_0685_2214_070621_A.csv	1	Low MPS sample flow proportionality. Backpressure up around 1.6 Kpa. Some crossing of SEMTECH system pressures (filters?). MPS gas temps invalid (> 300C) after observation 9500. GF mass flow values erroneous at times. RPM appears valid from obs 9600 thru 10,900. Filters 1 and 3 void, filter 2 suspect because flows not at setpoint.
0685-2214	pp_0685_2214_070621_B.csv	1	Low MPS sample flow proportionality. CO, CO2, O2, and RPM missing intermittently throughout test. MPS gas temp values erroneous throughout test.
0008-1644	pp_0008_1644_070629.csv	1	RPM is invalid through test. No PM sampling, so PM sampling parameters not reviewed. Exhaust mass flow rate values are suspect and intermittent throughout. Gaseous concentrations look OK. Short test (about 16 mins).
0619-0968	pp_0619_0968_070724_Acorr.csv	1	Low MPS sample flow proportionality. MPS gas temp values suspect from obsesrvation 3355 onward. GF filter temp values suspect (100-150C). GF mass flow invalid from point 4877 onward (affecting filters 2 and 3). MPS flow off setpoint from point 3390 onward (again, affecting filters 2 and 3, noted on filter log). C Ensfield reports OK to use steady "actual" flow.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
1688-1462	N/A, on test data	1	
2208-1918	pp_2208_1918_070615_A.csv	1	
2208-1918	pp_2208_1918_070615_B_fixed_Test-Added.csv	1	Exclude gaseous result observations from reporting where HC is missing (approx 2170 thru 4330). Also, exclude data beyond observation 9600.
2208-1918	pp_2208_1918_070615_C_Test_1.csv	1	
2208-1918	pp_2208_1918_070615_C_Test_2.csv	1	
0685-1214	pp_0685_1214_070626.csv	1	Exclude obs 0 - 990 from reporting (engine appears off but exhaust flow rate not under 20).
0685-2214	pp_0685_2214_070621_A.csv	1	
0685-2214	pp_0685_2214_070621_B.csv	1	Exclude observations where gaseous is missing.
0008-1644	pp_0008_1644_070629.csv	1	Exhaust mass flow rate suspect and intermittent, so exclude entire test from summary reporting.
0619-0968	pp_0619_0968_070724_Acorr.csv	1	Exclude data 12,500 onward (all engine off w/ erroneous spike)

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
0619-0968	pp_0619_0968_070724_B.csv	1		Test B, filter 3			
0603-2702	N/A, ineligible	1			N/A	#VALUE!	
3858_1482	pp_3858_1482_Test2.csv	2	None	Test 2, filter 2		100	800
3858_1482_1	pp_3858_1482_1_Test1.csv	2	None			145	720
3858_1482_1	pp_3858_1482_1_Test2.csv	2	None	Test 2, filter 3		130	840
3858_5754	pp_3858_5754_Test1.csv	2	None	Test 1, filter 3		110	810
3858_5754	pp_3858_5754_Test2.csv	2	None				
2523_0713	pp_2523_0713a_Test1.csv	2	None	Test a, filter 3		210	755

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
0619-0968	pp_0619_0968_070724_B.csv	1							
0603-2702	N/A, ineligible	1	N/A					0	
								0	
3858_1482	pp_3858_1482_Test2.csv	2						0	
3858_1482_1	pp_3858_1482_1_Test1.csv	2						0	
3858_1482_1	pp_3858_1482_1_Test2.csv	2							
3858_5754	pp_3858_5754_Test1.csv	2		750	750			0	
3858_5754	pp_3858_5754_Test2.csv	2							
2523_0713	pp_2523_0713a_Test1.csv	2	210	755	755	10.5	179	225	-7%

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
0619-0968	pp_0619_0968_070724_B.csv	1							OK	Yes	No
0603-2702	N/A, ineligible	1	N/A				0		N/A	N/A	
							0				
3858_1482	pp_3858_1482_Test2.csv	2					0		OK	No	Yes
3858_1482_1	pp_3858_1482_1_Test1.csv	2					0		OK	No	Yes
3858_1482_1	pp_3858_1482_1_Test2.csv	2							OK	Yes	Yes
3858_5754	pp_3858_5754_Test1.csv	2					0		N/A	No	No
3858_5754	pp_3858_5754_Test2.csv	2							Multiply by 2		
2523_0713	pp_2523_0713a_Test1.csv	2			10.5	1500	0		OK	Yes	Yes

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
0619-0968	pp_0619_0968_070724_B.csv	1	No			No	if Ex < 20, RPM = 0, otherwise, rpm appears valid.
0603-2702	N/A, ineligible	1	N/A	N/A	N/A	N/A	N/A
3858_1482	pp_3858_1482_Test2.csv	2	Yes		Yes	Yes	if Ex > 250 kg/hr, RPM = 4.4 X Ex else RPM = 4.7 x Ex. Also, if Ex < 20, RPM = 0
3858_1482_1	pp_3858_1482_1_Test1.csv	2	Yes		Yes	Yes	if Ex > 250 kg/hr, RPM = 4.4 X Ex else RPM = 4.7 x Ex. Also, if Ex < 20, RPM = 0
3858_1482_1	pp_3858_1482_1_Test2.csv	2	No		Yes	Yes	if Ex > 250 kg/hr, RPM = 4.4 X Ex else RPM = 4.7 x Ex. Also, if Ex < 20, RPM = 0
3858_5754	pp_3858_5754_Test1.csv	2	Yes		Yes	Yes	PAMS merged for this test
3858_5754	pp_3858_5754_Test2.csv	2			Yes	Yes	, Please merge in PAMS for this test
2523_0713	pp_2523_0713a_Test1.csv	2	No		No	Yes	if Ex > 450 kg/hr, RPM = 2.2 X Ex else RPM = 3.1 x Ex. Also, if Ex < 20, RPM = 0

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
0619-0968	pp_0619_0968_070724_B.csv	1	N/A	entire test
0603-2702	N/A, ineligible	1	N/A	N/A
3858_1482	pp_3858_1482_Test2.csv	2	Use 1482_1_Test 1 Correlatoin	Obs 0 - 4831 (GPS times 12:03:22 PM - 1:23:52 PM)
3858_1482_1	pp_3858_1482_1_Test1.csv	2	Obs 0 - 7600 (GPS times 12:15:29 PM - 2:22:08 PM) of this test appears valid, use these for correlation	Obs 7601 (GPS time 2:22:09 PM) onward
3858_1482_1	pp_3858_1482_1_Test2.csv	2	Use 1482_1_Test 1 Correlatoin	Obs 0 - 1199, 6751 - 7200, 9050 onward
3858_5754	pp_3858_5754_Test1.csv	2	No valid RPM in this session	If PAMS, use entire test. Otherwise, there is no valid RPM in this session
3858_5754	pp_3858_5754_Test2.csv	2	RPM may be valid for obs 3600 thru 5000, but appears to be half scale	If PAMS, use entire test.
2523_0713	pp_2523_0713a_Test1.csv	2	RPM appears invalid throughout most of test, only a small operation range near start of test appears valid (Obs 615 - 2585)	entire test

Test ID	Associated Filenames	Phase	General Review Comments
0619-0968	pp_0619_0968_070724_B.csv	1	RPM looks OK. Chiller temp values spike around ob 4500 for about 1 minute, appears erroneous values. Low MPS sample flow proportionality. MPS gas temp values erroneous (up above 350 C). MPS flows low (Qtotal between 10 and 11). GF temp values erroneous from point 4700 onward (up to 140C). GF Mass flows look OK for this test.
0603-2702	N/A, ineligible	1	N/A, ineligible facility
3858_1482	pp_3858_1482_Test2.csv	2	Too many suspect data points in PAMS RPM , so used corrected PEMS RPM. No HC emissions, chiller temp periodically too high (16-41C) from obs 5400 onward, external line temp values listed at 35-40C entire test (but independently controlled so 35 to 40C aren't the real values) , grav filter temps around 40 (a bit low) then jump up obs 5400 onward (too high)
3858_1482_1	pp_3858_1482_1_Test1.csv	2	Too many suspect data points in PAMS RPM , so used corrected PEMS RPM. No HC emissions. Exhaust backpressure and MPS inlet pressure increase through test to > 2.5 kPA (OK). Chiller temp values erratic thru first 5000 seconds, external line temp values listed at 30-50C, but independently controlled in Ph2, so 35 to 40C aren't the real values. All MPS flows drop way out of range from obs 4900 onward (OK since this is after the filters), and grav filter temp values erratic (between 45C and 220 C).
3858_1482_1	pp_3858_1482_1_Test2.csv	2	Too many suspect data points in PAMS RPM , so used corrected PEMS RPM. Exhaust backpressure (MPS inlet pressure) up around 1.8 kPa
3858_5754	pp_3858_5754_Test1.csv	2	All pollutants appear to periodically drop out for first 8800 observations of test. Heated line temp is around 45C, (disregard, independently controlled and recorded). Backpressures still appear high (around 2.5 kPa). Exh flow and other values are missing or erroneous from ob 11400 onward. Low MPS sample flow proportionality. MPS flow is zero at idle (most of this test). Grav filter temp values are around 200 (should be 49C), become erratic around 8000 seconds. Manifold temp values are around 150, and erratic around 8000. Some temps may be invalid readings (true temps may or may not be out of range). Sensors indicates gases were zero-calibrated on exhaust, so gases are biased.
3858_5754	pp_3858_5754_Test2.csv	2	Most gases (except HC) appear to go to zero at idle (possibly due to gases being zero'd on exhaust). Low MPS sample flow proportionality. Engine appears turned off from approx observation 5000 onward. Backpressure gets up about 1.8 kpa. External line temp around 40C (disregard, independently controlled and recorded). Filter/manifold temps values appear wrong here too.
2523_0713	pp_2523_0713a_Test1.csv	2	Exhaust backpressure (MPS inlet pressure) up to almost 3.5 kPa. External line temp low (disregard, independently controlled and recorded). GF Manifold temp 32-38C, filter temps a bit low (35-45C), cyclone 40-45C.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
0619-0968	pp_0619_0968_070724_B.csv	1	
0603-2702	N/A, ineligible	1	
3858_1482	pp_3858_1482_Test2.csv	2	No HC in test (don't report HC values). Also, PM and gaseous data suspect throughout due to possible improper chiller, external line, and grav filter temps (OK to report them)
3858_1482_1	pp_3858_1482_1_Test1.csv	2	No HC in test (don't report HC values). Also, PM and gaseous data suspect throughout due to possible improper chiller, external line, and grav filter temps (OK to report them)
3858_1482_1	pp_3858_1482_1_Test2.csv	2	
3858_5754	pp_3858_5754_Test1.csv	2	Don't report anything past obs 11400. Ex mass flow rates and other observations are invalid from observation 11400 onward. Pollutant readings are suspect for first 8800 observations of test. All gaseous pollutants biased from zero calibrations on exhaust.
3858_5754	pp_3858_5754_Test2.csv	2	All gaseous pollutants biased from zero calibrations on exhaust. Engine is turned off from observation 5000 onward.
2523_0713	pp_2523_0713a_Test1.csv	2	

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
2523_0713	pp_2523_0713b_Test1.csv	2	None			210	755
2523_6087	pp_2523_6087_Test1.csv	2	None	Test 1, filter 3		190	805
2523_6087	pp_2523_6087_Test2.csv	2	None	Test 2, filter 2		190	805
2523_0210	2523_0210_Test 1.csv	2	None			0	
2523_0210	2523_0210_Test 2.csv	2	None				
3597_095k	pp_3597_095k_Test1.csv	2	None	Test 1, filter 3		0	
3597_0726	pp_3597_0726a_Test1.csv	2	None	Test a_Test1, filter 3		0	
3597_0726	pp_3597_0726a_Test2.csv	2	None				

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
2523_0713	pp_2523_0713b_Test1.csv	2	210	755	755	10.5	179	225	-7%
2523_6087	pp_2523_6087_Test1.csv	2		850	850			0	
2523_6087	pp_2523_6087_Test2.csv	2							
2523_0210	2523_0210_Test 1.csv	2	265	950	950			0	
2523_0210	2523_0210_Test 2.csv	2							
3597_095k	pp_3597_095k_Test1.csv	2	356	1990	1990			0	
3597_0726	pp_3597_0726a_Test1.csv	2	223	825	825	10.5	179	246	-10%
3597_0726	pp_3597_0726a_Test2.csv	2							

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
2523_0713	pp_2523_0713b_Test1.csv	2							OK	Yes	Yes
2523_6087	pp_2523_6087_Test1.csv	2	535	2000			0		N/A	No	No
2523_6087	pp_2523_6087_Test2.csv	2	535	2000					OK	Yes	Yes
2523_0210	2523_0210_Test 1.csv	2	680	1970			0		N/A	No	Yes
2523_0210	2523_0210_Test 2.csv	2							N/A	No	Yes
3597_095k	pp_3597_095k_Test1.csv	2	360	2340			0		OK	No	Yes
3597_0726	pp_3597_0726a_Test1.csv	2	583	2000	10.5	1500	1000	**-72%**	OK	Yes	No
3597_0726	pp_3597_0726a_Test2.csv	2							OK	No	No

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
2523_0713	pp_2523_0713b_Test1.csv	2	No			Yes	if Ex > 450 kg/hr, RPM = 2.2 X Ex else RPM = 3.1 x Ex Also, if Ex < 20, RPM = 0
2523_6087	pp_2523_6087_Test1.csv	2	Yes			Yes	if Ex > 525 kg/hr, RPM = 3 X Ex else RPM = 4.1 x Ex. Also, if Ex < 20, RPM = 0
2523_6087	pp_2523_6087_Test2.csv	2	No			Yes	if Ex > 525 kg/hr, RPM = 3 X Ex else RPM = 4.1 x Ex. Also, if Ex < 20, RPM = 0
2523_0210	2523_0210_Test 1.csv	2	No			Yes	if Ex > 400 kg/hr, RPM = 2.9 X Ex else RPM = 3.5 x Ex. Also, if Ex < 20, RPM = 0
2523_0210	2523_0210_Test 2.csv	2	No			Yes	if Ex > 400 kg/hr, RPM = 2.9 X Ex else RPM = 3.5 x Ex. Also, if Ex < 20, RPM = 0
3597_095k	pp_3597_095k_Test1.csv	2	No		Yes	Yes	if Ex < 20, RPM = 0
3597_0726	pp_3597_0726a_Test1.csv	2	No			No	RPM appears to need to be capped at 1800 for the first 1800 seconds, then use as-is thereafter
3597_0726	pp_3597_0726a_Test2.csv	2	No			No	RPM appears OK

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
2523_0713	pp_2523_0713b_Test1.csv	2	No valid RPM in this session (other than some idle periods). Use relationship from 2523_0713Test1.	entire test
2523_6087	pp_2523_6087_Test1.csv	2	Use Test 2 correlation	entire test
2523_6087	pp_2523_6087_Test2.csv	2	Some RPM appears valid (Obs 900-1300, 2000 - 2400), spikes throughout rest of test.	entire test
2523_0210	2523_0210_Test 1.csv	2	No valid RPM in this session, RPM based on pre-test exhaust to RPM correlation measurements.	entire test
2523_0210	2523_0210_Test 2.csv	2	No valid RPM in this session, RPM based on pre-test exhaust to RPM correlation measurements.	entire test
3597_095k	pp_3597_095k_Test1.csv	2	N/A	entire test
3597_0726	pp_3597_0726a_Test1.csv	2	Obs 1801 - end	Obs 0-1800, cap at 1800
3597_0726	pp_3597_0726a_Test2.csv	2		

Test ID	Associated Filenames	Phase	General Review Comments
2523_0713	pp_2523_0713b_Test1.csv	2	Exhaust backpressure (MPS inlet pressure) gets up to around 3 kPa. External line temp low (disregard, independently controlled and recorded). Grav filter temp values start high (around 80C) then becomes very erratic, manifold temp values below 40 C, cyclone around 45C.
2523_6087	pp_2523_6087_Test1.csv	2	Gases look good, backpressure generally under 1.2 kPa. External line temp values low (disregard, independently controlled and recorded). GF filter temp values around 220 (high) but become erratic, cyclone and manifold temps between 25C and 45C. Exh mass flow rates are suspect during autozeros (values drop to near zero), and exhaust volume rate (SCFM) and other parameters missing during these periods.
2523_6087	pp_2523_6087_Test2.csv	2	External line temp low (disregard, independently controlled and recorded). GF manifold temp values around 37C, GF filter temp values around 220 C, suggesting the thermocouples are likely switched. If so, GF filter temps (37 C) a bit low.
2523_0210	2523_0210_Test 1.csv	2	Exhaust mass flow rates are suspect during autozeros (they drop to near zero values a couple times during each autozero). Exhaust volume flow rate and other parameters also missing during these autozeros. Exhaust backpressure high (above 2.5 Mpa). External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (27-35C) appear low.
2523_0210	2523_0210_Test 2.csv	2	Exhaust bakpressure up around 2.5 kPa. Exhaust mass flow rates suspect during autozeros, and flow rate/other parameters missing during autozeros. External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (35-42C) appear low.
3597_095k	pp_3597_095k_Test1.csv	2	Too many suspect data points in PAMS RPM , so used corrected PEMS RPM. Gaseous data invalid. Backpressure jumps up around 1.3 kpa later in test (around observation 8600). External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (30-42C) appear low.
3597_0726	pp_3597_0726a_Test1.csv	2	Max exhaust mass flow rates are much lower than expected for an engine of this displacement, so exhaust mass flow rates are suspect. Gaseous data invalid. Exhaust backpressures looks good (< 0.5 kpa) External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (29-34C) appear low.
3597_0726	pp_3597_0726a_Test2.csv	2	Max exhaust mass flow rates are much lower than expected for an engine of this displacement, so exhaust mass flow rates are suspect. Gaseous data invalid. Exhaust backpressures a bit high (>1 kpa) External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (34-37C) appear low. However, no filters were collected during this session.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
2523_0713	pp_2523_0713b_Test1.csv	2	
2523_6087	pp_2523_6087_Test1.csv	2	Exhaust flow and gaseous data suspect during autozeros.
2523_6087	pp_2523_6087_Test2.csv	2	Exhaust flow and gaseous data suspect during autozeros.
2523_0210	2523_0210_Test 1.csv	2	Exhaust flow and gaseous data suspect during autozeros.
2523_0210	2523_0210_Test 2.csv	2	Exhaust flow and gaseous data suspect during autozeros.
3597_095k	pp_3597_095k_Test1.csv	2	Gaseous data invalid throughout test. Exhaust flow suspect during autozeros.
3597_0726	pp_3597_0726a_Test1.csv	2	Gaseous data invalid throughout test. Exhaust flow rates suspect throughout test.
3597_0726	pp_3597_0726a_Test2.csv	2	Gaseous data invalid throughout test. Exhaust flow rates suspect throughout test.

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
3597_0726	pp_3597_0726b_Test1.csv	2	None				
2745_1190	pp_2745_1190_Test1.csv	2	None	Test 1, filter 3		0	
2745_1190	pp_2745_1190_Test3.csv	2	None	Test 3, filter 3			
3858_4862_1	pp_3858_4862_1_Test1.csv	2	None			0	
3858_4862_2	pp_3858_4862_2_Test1.csv	2	None	Test 1, filter 3		0	
3858_4862_2	pp_3858_4862_2_Test2.csv	2	None				
3858_4862_2	pp_3858_4862_2_Test3.csv	2	None				
3858_4862_2	pp_3858_4862_2_Test4.csv	2	None				
3597-4734	pp_3597-4734_Test1.csv	2	None	Test 1, filter 3		0	
3597-4734	pp_3597-4734_Test2.csv	2	None	Test 2, filter 3			
3597_9706	pp_3597_9706_Test1.csv	2	None	Test 1, filter 3		0	

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
3597_0726	pp_3597_0726b_Test1.csv	2							
2745_1190	pp_2745_1190_Test1.csv	2	265	1320	1320	3.9	68	150	44%
2745_1190	pp_2745_1190_Test3.csv	2							
3858_4862_1	pp_3858_4862_1_Test1.csv	2							
3858_4862_2	pp_3858_4862_2_Test1.csv	2							
3858_4862_2	pp_3858_4862_2_Test2.csv	2							
3858_4862_2	pp_3858_4862_2_Test3.csv	2							
3858_4862_2	pp_3858_4862_2_Test4.csv	2	150	720	720	4	69	83	45%
3597-4734	pp_3597-4734_Test1.csv	2	150	800	800			0	
3597-4734	pp_3597-4734_Test2.csv	2							
3597_9706	pp_3597_9706_Test1.csv	2	175	860	860	4.5	77	110	37%

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
3597_0726	pp_3597_0726b_Test1.csv	2							OK	No	No
2745_1190	pp_2745_1190_Test1.csv	2	450	2430	3.9	680	551	-22%	N/A	No	No
2745_1190	pp_2745_1190_Test3.csv	2							1.45	Yes	No
3858_4862_1	pp_3858_4862_1_Test1.csv	2							N/A	Yes	Yes
3858_4862_2	pp_3858_4862_2_Test1.csv	2							OK	Yes	No
3858_4862_2	pp_3858_4862_2_Test2.csv	2							N/A	No	No
3858_4862_2	pp_3858_4862_2_Test3.csv	2							N/A	N/A	N/A
3858_4862_2	pp_3858_4862_2_Test4.csv	2	575	2000	4	685	457	21%	OK	Yes	No
3597-4734	pp_3597-4734_Test1.csv	2	370	2300			0		OK	Yes	No
3597-4734	pp_3597-4734_Test2.csv	2							OK	No	No
3597_9706	pp_3597_9706_Test1.csv	2	440	2030	4.5	730	494	-12%	N/A	Yes	Yes

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
3597_0726	pp_3597_0726b_Test1.csv	2	No			No	RPM appears OK
2745_1190	pp_2745_1190_Test1.csv	2	Yes			Yes	if Ex > 400 kg/hr, RPM = 6.0 X Ex else RPM = 5.3 x Ex. Also, if Ex < 20, RPM = 0
2745_1190	pp_2745_1190_Test3.csv	2	No			No	No changes to this session, except if Ex < 20 kg/hr, RPM = 0
3858_4862_1	pp_3858_4862_1_Test1.csv	2	No			Yes	if Ex > 400 kg/hr, RPM = 3.2 X Ex else RPM = 4.8 x Ex. Also, if Ex < 20, RPM = 0
3858_4862_2	pp_3858_4862_2_Test1.csv	2	No			No	For this entire session, filter out the spikes by setting any RPM > 2000 to 1700
3858_4862_2	pp_3858_4862_2_Test2.csv	2	Yes				if Ex > 400 kg/hr, RPM = 3.2 X Ex else RPM = 4.8 x Ex. Also, if Ex < 20, RPM = 0
3858_4862_2	pp_3858_4862_2_Test3.csv	2	N/A				3 minute test, no engine operation, disregard
3858_4862_2	pp_3858_4862_2_Test4.csv	2	No			Yes	No changes to this session, except if Ex < 20 kg/hr, RPM = 0
3597-4734	pp_3597-4734_Test1.csv	2	No			No	if Ex < 20 kg/hr, RPM = 0
3597-4734	pp_3597-4734_Test2.csv	2	No			No	if Ex < 20 kg/hr, RPM = 0
3597_9706	pp_3597_9706_Test1.csv	2	Yes			Yes	if Ex > 300 kg/hr, RPM = 3.7 X Ex else RPM = 4.6 x Ex. Also, if Ex < 20, RPM = 0

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
3597_0726	pp_3597_0726b_Test1.csv	2		
2745_1190	pp_2745_1190_Test1.csv	2	No valid RPM in this session, use relationship from Test 3.	Entire test
2745_1190	pp_2745_1190_Test3.csv	2	Entire test (after increasing by 45%) (until engine is shut off and RPM spikes around observation 9300).	entire test
3858_4862_1	pp_3858_4862_1_Test1.csv	2	RPM invalid throughout, test 4 correlation was used.	entire test
3858_4862_2	pp_3858_4862_2_Test1.csv	2		entire test
3858_4862_2	pp_3858_4862_2_Test2.csv	2	Test 4 correlation was used.	entire test
3858_4862_2	pp_3858_4862_2_Test3.csv	2	disregard this session	N/A
3858_4862_2	pp_3858_4862_2_Test4.csv	2	Use observations 2600 - 7200 for correlation for other sessions..	Obs 0 - 2599 (RPM = 0)
3597-4734	pp_3597-4734_Test1.csv	2		entire test
3597-4734	pp_3597-4734_Test2.csv	2	N/A	entire test
3597_9706	pp_3597_9706_Test1.csv	2	No valid RPM in this session, Test 3 correlation was used.	entire test

Test ID	Associated Filenames	Phase	General Review Comments
3597_0726	pp_3597_0726b_Test1.csv	2	Max exhaust mass flow rates are much lower than expected for an engine of this displacement, so exhaust mass flow rates are suspect. Gaseous data invalid. Exhaust backpressures a bit high (>1.2 kpa) External line temp low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (34-38C) appear low.
2745_1190	pp_2745_1190_Test1.csv	2	Low MPS sample flow proportionality. Several 9-minute autozeros. O2 data invalid. Backpressure up to 1.2 kPa. External line temp a bit low (disregard, independently controlled and recorded). Manifold temp and filter temp values appear switched, if so, GF filter temps (26-35C) appear low.
2745_1190	pp_2745_1190_Test3.csv	2	Low MPS sample flow proportionality. Two 8 minute autozeros, and O2 data invalid. Backpressure lower than first session (under 0.7 kPa). External line temperature values invalid from obs 4900 - 6000 (disregard, independently controlled and recorded). MPS gas temps low (under 20C throughout). Manifold temp and filter temp values appear switched, if so, GF filter temps (33-35C) appear low.
3858_4862_1	pp_3858_4862_1_Test1.csv	2	Engine off between observations 1300 and 4600. No filters, so disregard PM sampling system temps and GF mass flows. Other data (gaseous and exhaust mass flow rate data) appears valid.
3858_4862_2	pp_3858_4862_2_Test1.csv	2	External line temps a bit low (disregard, independently controlled and recorded). MPS gas temps low (12-23C throughout). Manifold temp and filter temp values appear switched, if so, GF filter temps (29-35C) appear low.
3858_4862_2	pp_3858_4862_2_Test2.csv	2	Under 1 minute of operation data in this 16-minute session, no RPM, Session 4 correlation used.
3858_4862_2	pp_3858_4862_2_Test3.csv	2	3 minute session, no engine operation
3858_4862_2	pp_3858_4862_2_Test4.csv	2	RPM spikey at engine off (thru ob 2599), otherwise RPM appears OK. I don't trust the pre/post test RPM cal data, the cal RPM values are too high, likely taken (via handheld tach) off a pulley which rotates faster than crankshaft. MPS gas temps low (19-29C throughout). Manifold temp and filter temp values appear switched, if so, GF filter temps (35-38C) appear low. Cyclone temp high.
3597-4734	pp_3597-4734_Test1.csv	2	Low MPS sample flow proportionality. Test is mostly idle, rpm spikey (invalid) at engine off (ob 4330 onward), otherwise OK. MPS gas temps low (17-23C throughout). Grav filter temp values a bit low (37-41c), erratic after engine off (no isssue). Cyclone temp high (61-64). Manifold temp low (29-33C).
3597-4734	pp_3597-4734_Test2.csv	2	RPM appears OK. Low MPS sample flow proportionality. MPS gas temp 20-25. Cyclone temp high (64-66, Grav filter temp low (33-46), GF manifold temp low (31-36).
3597_9706	pp_3597_9706_Test1.csv	2	Exhaust backpressure generally < 0.5 kPa. Some pulsation seen, but not issue (per discussion w/ C Ensfield, limited to non-regulated systems like SEMTECH pumps). GF cyclone temp values fluctuate quite a bit (75C down to 33C), and GF manifold temp low (25 to 30C). GF filter temp values suspect (92C down to 40C).

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
3597_0726	pp_3597_0726b_Test1.csv	2	Gaseous data invalid throughout test. Exhaust flow rates suspect throughout test.
2745_1190	pp_2745_1190_Test1.csv	2	O2 data invalid throughout - , don't report O2 data here.
2745_1190	pp_2745_1190_Test3.csv	2	O2 data invalid throughout - , don't report O2 data here.
3858_4862_1	pp_3858_4862_1_Test1.csv	2	
3858_4862_2	pp_3858_4862_2_Test1.csv	2	
3858_4862_2	pp_3858_4862_2_Test2.csv	2	
3858_4862_2	pp_3858_4862_2_Test3.csv	2	
3858_4862_2	pp_3858_4862_2_Test4.csv	2	
3597-4734	pp_3597-4734_Test1.csv	2	
3597-4734	pp_3597-4734_Test2.csv	2	
3597_9706	pp_3597_9706_Test1.csv	2	

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
3597_9706	pp_3597_9706_Test2.csv	2	None	Test 2, filter 3			
3597_9706	pp_3597_9706_Test3.csv	2	None	Test 3, filter 3			
8925-2466	8925-2466a.csv	3	Test a, filter 3	No	88	180	850
8925-2466	8925-2466b.csv	3	None	No		180	825
9960-6086 **(no data)**	N/A	3	None	No		0	
0229-3781	0229-3781.csv	3	None	No	N/A	#VALUE!	N/A
0229-0045	0229-0045.csv	3	None	No	N/A	140	810
9960-6086	9960_6086a.csv	3	None	No		120	630
9960-6086	9960_6086b.csv	3	None	No		0	
9960-6086	9960-6086c.csv	3	None	No		0	
9960-5674	9960-5674a.csv	3	None	No		211	788
9960-5674	9960-5764b.csv	3	None	No		0	
8391-3333_1	8391-3333_1A.csv	3	None	No	N/A	371	885
8391-3333_1	8391-3333_1B.csv	3	None	No	N/A	385	885
8391-3333_2	8391-3333_2.csv	3	None	No		N/A	N/A

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
3597_9706	pp_3597_9706_Test2.csv	2							
3597_9706	pp_3597_9706_Test3.csv	2							
								0	
8925-2466	8925-2466a.csv	3	175	858	858	6.6	110	157	10%
8925-2466	8925-2466b.csv	3	180	858	858	6.6	110	157	13%
9960-6086 **(no data)**	N/A	3		1000	1000			0	N/A
0229-3781	0229-3781.csv	3	N/A	N/A	N/A		N/A	N/A	N/A
0229-0045	0229-0045.csv	3	N/A	N/A	N/A		N/A	N/A	N/A
9960-6086	9960_6086a.csv	3	120	630	630		N/A	N/A	N/A
9960-6086	9960_6086b.csv	3						0	N/A
9960-6086	9960-6086c.csv	3						0	N/A
9960-5674	9960-5674a.csv	3	211	788	788	8.3	140	184	13%
9960-5674	9960-5764b.csv	3							N/A
8391-3333_1	8391-3333_1A.csv	3	371	885	885	15.7	263	388	-5%
8391-3333_1	8391-3333_1B.csv	3	385	885	885	15.7	263	388	-1%
8391-3333_2	8391-3333_2.csv	3	380	885	885	15.7	263	388	-3%

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
3597_9706	pp_3597_9706_Test2.csv	2							OK	Yes	No
3597_9706	pp_3597_9706_Test3.csv	2							OK	No	No
							0				
8925-2466	8925-2466a.csv	3	610	2300	6.6	935	717	-18%	OK	None	No
8925-2466	8925-2466b.csv	3	760	2160	6.6	935	673	11%	OK	None	No
9960-6086 **(no data)**	N/A	3					0	N/A			
0229-3781	0229-3781.csv	3	N/A	N/A	N/A	N/A	N/A	N/A	OK	Yes	No
0229-0045	0229-0045.csv	3	N/A	N/A	N/A	N/A	N/A	N/A	OK	Yes	No
9960-6086	9960_6086a.csv	3	635	2600			0	100%	OK	Yes	No
9960-6086	9960_6086b.csv	3					0	N/A	OK	Yes	No
9960-6086	9960-6086c.csv	3					0	N/A	OK	Yes	No
9960-5674	9960-5674a.csv	3	1000	2000	8.3	1185	790	21%	OK	No	No
9960-5674	9960-5764b.csv	3						N/A	OK	Yes	No
8391-3333_1	8391-3333_1A.csv	3	1369	1830	15.7	2240	1366	0%	OK	Yes	No
8391-3333_1	8391-3333_1B.csv	3	1250	1830	15.7	2240	1366	-9%	OK	No	No
8391-3333_2	8391-3333_2.csv	3	N/A	N/A	15.7	2240	N/A	N/A	N/A	None	No

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
3597_9706	pp_3597_9706_Test2.csv	2	No			No	RPM has noise and spikes at engine off, but otherwise appears OK. Set RPM = 0 when Ex < 20 kg/hr.
3597_9706	pp_3597_9706_Test3.csv	2	No			No	RPM has noise and spikes at engine off, but otherwise appears OK. Set RPM = 0 when Ex < 20 kg/hr.
8925-2466	8925-2466a.csv	3	None		Yes	No	N/A
8925-2466	8925-2466b.csv	3	None		Yes	No	N/A
9960-6086 **(no data)**	N/A	3		Yes			
0229-3781	0229-3781.csv	3	No	Yes	Yes	Yes	If RPM > 2250, RPM = 813
0229-0045	0229-0045.csv	3	No	Yes	Yes	Yes	If RPM > 2500, RPM = midpoint between surrounding values (interpolate)
9960-6086	9960_6086a.csv	3	No			Yes	If Ex < 150 kg/hr AND RPM > 1500, RPM = 630 else if RPM > 3000, RPM = 5.17 x Ex else RPM = RPM
9960-6086	9960_6086b.csv	3	No			Yes	Same as eqn for Session a
9960-6086	9960-6086c.csv	3	No			Yes	Same as eqn for Session a
9960-5674	9960-5674a.csv	3	No	Yes		No	N/A
9960-5674	9960-5764b.csv	3	No	Yes		No	If RPM > 2500, RPM = 788
8391-3333_1	8391-3333_1A.csv	3	No	Yes		No	If RPM > 2000, RPM = 825
8391-3333_1	8391-3333_1B.csv	3	No			No	N/A
8391-3333_2	8391-3333_2.csv	3	No	Yes		Yes	if Ex > 700 kg/hr, RPM = 1.48 X Ex else RPM = 2.34 x Ex

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
3597_9706	pp_3597_9706_Test2.csv	2	N/A	entire test
3597_9706	pp_3597_9706_Test3.csv	2	Entire test (until engine is shut off around observation 7500)	entire test
8925-2466	8925-2466a.csv	3	N/A	N/A
8925-2466	8925-2466b.csv	3	N/A	N/A
9960-6086 **(no data)**	N/A	3		
0229-3781	0229-3781.csv	3	N/A	Entire test
0229-0045	0229-0045.csv	3	N/A	Entire test
9960-6086	9960_6086a.csv	3	N/A	Entire test
9960-6086	9960_6086b.csv	3	N/A	Entire test
9960-6086	9960-6086c.csv	3	N/A	Entire test
9960-5674	9960-5674a.csv	3	N/A	
9960-5674	9960-5764b.csv	3	N/A	Entire test (session B)
8391-3333_1	8391-3333_1A.csv	3	N/A	Entire test
8391-3333_1	8391-3333_1B.csv	3	N/A	N/A
8391-3333_2	8391-3333_2.csv	3	N/A	Entire test

Test ID	Associated Filenames	Phase	General Review Comments
3597_9706	pp_3597_9706_Test2.csv	2	Exhaust backpressure generally < 0.4 kPa. MPS Gas Temp ranges from 15 - 37C. GF manifold temp low (26 to 31C). GF filter temp values ranging between 46C and 60C and then jump to 220 after ob 3500 (erroneous).
3597_9706	pp_3597_9706_Test3.csv	2	Exhaust backpressure generally < 0.4 kPa. External line temps between 28C & 37C. Drain Pressure 1 values don't appear to pulsate as do DP2 and sample pressure values, and DP1 pressure trend differs from the other 2 (non-critical). MPS Gas Temp ranges from 13 - 33C. MPS Q_Total flow is low (11.7 to 12.2 LPM, should be 12.5). Could possibly affect filter flow rates. GF filter temps erratic and suspect (between 45C and 220C). GF manifold temp low (26 to 31C).
8925-2466	8925-2466a.csv	3	Only about 1 hr am (2 filters), data appears OK - MPS proportionality OK, not great. NDIR cuts out before end of test (about 14 minutes without CO/CO2/O2 or RPM).
8925-2466	8925-2466b.csv	3	Only about 1 hr in pm (3 filters), data appears OK - MPS proportionality OK, not great. NDIR cuts out before end of test (about 10 minutes without CO/CO2/O2 or RPM).
9960-6086 **(no data)**	N/A	3	No data
0229-3781	0229-3781.csv	3	Most operation is idle.
0229-0045	0229-0045.csv	3	Low MPS sample flow proportionality.
9960-6086	9960_6086a.csv	3	
9960-6086	9960_6086b.csv	3	Low MPS sample flow proportionality.
9960-6086	9960-6086c.csv	3	Low MPS sample flow proportionality.
9960-5674	9960-5674a.csv	3	Overall, test looks good. MPS proportionality appears skewed. MPS total flowrate appears a bit low.
9960-5674	9960-5764b.csv	3	Overall test looks good. MPS proportionality appears skewed, but MPS total flowrate looks OK on b.
8391-3333_1	8391-3333_1A.csv	3	Appears OK, except no PM. MPS Qtotal is < 12 for most of test (below allowable range in PEMS SOPS), but no PM for this test, so OK.
8391-3333_1	8391-3333_1B.csv	3	OK (no PM) - Checking w/ Carl E on pulsation at idle (not critical), and DP1 drop around 2300 seconds. Also, Qtotal too low here, but no PM so fine.
8391-3333_2	8391-3333_2.csv	3	No pm, no RPM, CO, CO2, or O2. work-based gaseous HC and Nox are both very high, could be due to RPM based on exhaust beyond range of estimated BSFC curve. All HC and Nox values are suspect, possibly due to fuel values suspect due to no carbon measurements.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
3597_9706	pp_3597_9706_Test2.csv	2	
3597_9706	pp_3597_9706_Test3.csv	2	
8925-2466	8925-2466a.csv	3	Exclude approx last 14 minutes of test no NDIR (CO/CO2/O2 or RPM). Affected filter 3.
8925-2466	8925-2466b.csv	3	Exclude approx last 10 minutes of test no NDIR (CO/CO2/O2 or RPM). Did not affect any filters.
9960-6086 **(no data)**	N/A	3	
0229-3781	0229-3781.csv	3	
0229-0045	0229-0045.csv	3	
9960-6086	9960_6086a.csv	3	
9960-6086	9960_6086b.csv	3	
9960-6086	9960-6086c.csv	3	
9960-5674	9960-5674a.csv	3	
9960-5674	9960-5764b.csv	3	
8391-3333_1	8391-3333_1A.csv	3	
8391-3333_1	8391-3333_1B.csv	3	
8391-3333_2	8391-3333_2.csv	3	No pm, no RPM, CO, CO2, or O2 throughout test (don't report any values that are in the files). Nox and HC are suspect.

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
8418-0097_1	8418-0097_1.csv	3	None	No		N/A	N/A
8418-0097_2	8418-0097_2.csv	3	None	No		N/A	N/A
8418-0377_1	8418-0377_1.csv	3	None	No		N/A	N/A
8418-0961	8418-0961.csv	3	None	No		N/A	N/A
8418-0377_2	N/A	3	None	No		N/A	N/A
0349-1836	0349-1836.csv	3	Filter 1	No	N/A	N/A	N/A
0349-2422	0349-2422.csv	3	None	No	N/A	N/A	N/A
9272-3481	9272-3481A.csv	3	None	No		0	
9272-3481	9272-3481B.csv	3	None	No		0	
9272-2494_1	9272-2494_1.csv	3	None	No		185	785
9272-2494_2	9272-2494_2A.csv	3	None	No		190	800
9272-2494_2	9272-2494_2B.csv	3	None	No		0	
9272-0853	9272-0853.csv	3	None	No		275	780

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
8418-0097_1	8418-0097_1.csv	3	N/A	800	800		N/A	N/A	N/A
8418-0097_2	8418-0097_2.csv	3	N/A	800	800		N/A	N/A	N/A
8418-0377_1	8418-0377_1.csv	3	N/A	750	750		N/A	N/A	N/A
8418-0961	8418-0961.csv	3	N/A	900	N/A		N/A	N/A	N/A
8418-0377_2	N/A	3	N/A	750	750		N/A	N/A	N/A
0349-1836	0349-1836.csv	3	170	655	655		N/A	N/A	N/A
0349-2422	0349-2422.csv	3	N/A	960	960		N/A	N/A	N/A
9272-3481	9272-3481A.csv	3	280	740	740	11	188	232	17%
9272-3481	9272-3481B.csv	3	280	740	740	11	188	232	17%
9272-2494_1	9272-2494_1.csv	3	158	780	780	6.6	110	143	9%
9272-2494_2	9272-2494_2A.csv	3	158	780	780	6.6	110	143	9%
9272-2494_2	9272-2494_2B.csv	3	158	780	780	6.6	110	143	9%
9272-0853	9272-0853.csv	3	297	776	776	11	188	243	18%

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
8418-0097_1	8418-0097_1.csv	3	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!	OK	Yes	No
8418-0097_2	8418-0097_2.csv	3	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!	OK	No	No
8418-0377_1	8418-0377_1.csv	3	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!	OK	Yes	No
8418-0961	8418-0961.csv	3	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!	Multiply by 2	No	No
8418-0377_2	N/A	3	N/A	N/A	N/A	N/A	#VALUE!	#VALUE!	N/A	N/A	No
0349-1836	0349-1836.csv	3	530	2610	N/A	N/A	N/A	N/A	OK	Yes	No
0349-2422	0349-2422.csv	3	N/A	N/A	N/A	N/A	N/A	N/A	OK	Yes	No
9272-3481	9272-3481A.csv	3	1109	2086	11	1570	1092	2%	OK	Yes	No
9272-3481	9272-3481B.csv	3			11	1570		N/A	OK	Yes	No
9272-2494_1	9272-2494_1.csv	3	700	1820	6.6	935	567	19%	OK	Yes	No
9272-2494_2	9272-2494_2A.csv	3	760	2300	6.6	935	717	6%	OK	No	No
9272-2494_2	9272-2494_2B.csv	3	N/A	N/A	6.6	935	N/A	N/A	OK	No	No
9272-0853	9272-0853.csv	3	1025	2150		1570	1125	-10%	OK	Yes	No

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
8418-0097_1	8418-0097_1.csv	3	No			No	If RPM > 4000, RPM = 763
8418-0097_2	8418-0097_2.csv	3	No			No	N/A
8418-0377_1	8418-0377_1.csv	3	No			No	If RPM > 5000 but < 10,000, RPM = 760 If RPM > 10,000, RPM = 2200
8418-0961	8418-0961.csv	3	Yes	Yes		Yes	if Ex > 400 kg/hr, RPM = 2.2 X Ex else RPM = 3.75 x Ex
8418-0377_2	N/A	3	N/A			N/A	
0349-1836	0349-1836.csv	3	No			No	If RPM > 3000, RPM = 630
0349-2422	0349-2422.csv	3	No			No	If RPM > 3000, RPM = 830
9272-3481	9272-3481A.csv	3	No	Yes		No	For obs 14621 - 14625: RPM = 1984 for obs 14711 - 14713, RPM = 2068 for obs 17128 - 17131, RPM = 2000, then, for all test, Δ RPM = difference between RPM values of prior observation and the current observation. If Δ RPM > 1000 and prior RPM < 1000, RPM = 720 If Δ RPM > 1000 and prior RPM > 1000, RPM = 1984
9272-3481	9272-3481B.csv	3	No	Yes		Yes	If RPM > 1000 and RPM < 2200, RPM =measured RPM Otherwise, if Ex > 600 kg/hr, RPM = 1.8 x Ex else RPM = 2.6 x Ex
9272-2494_1	9272-2494_1.csv	3	No			No	If RPM > 3000, RPM = 877
9272-2494_2	9272-2494_2A.csv	3	No			No	N/A
9272-2494_2	9272-2494_2B.csv	3	Yes			Yes	if Ex > 500 kg/hr, RPM = 2.5 x Ex else RPM = 4.1 x Ex, cap RPM at 2450
9272-0853	9272-0853.csv	3	Yes			Yes	For obs 0 - 11,960, if RPM > 2500, RPM = midpoint between surrounding values (interpolate) for obs 11,961 - end, if Ex > 600 kg/hr, RPM = 2.1 x Ex else RPM = 2.75 x Ex

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
8418-0097_1	8418-0097_1.csv	3	N/A	Entire test
8418-0097_2	8418-0097_2.csv	3	N/A	N/A
8418-0377_1	8418-0377_1.csv	3	N/A	Entire test
8418-0961	8418-0961.csv	3	8418_0961, First 6500 obs of file, GPS times ranges 11:41:15 - 13:29:27	After 6500 seconds
8418-0377_2	N/A	3		
0349-1836	0349-1836.csv	3	N/A	Entire test
0349-2422	0349-2422.csv	3	N/A	Entire test
9272-3481	9272-3481A.csv	3	N/A	Entire test
9272-3481	9272-3481B.csv	3	N/A	Observation 765 onward
9272-2494_1	9272-2494_1.csv	3	N/A	Entire test
9272-2494_2	9272-2494_2A.csv	3	N/A	N/A
9272-2494_2	9272-2494_2B.csv	3	Use file 9272_2494_2B: First 6820 observations of file, GPS time ranges 13:53:05 - 15:46:42	Obs 6821 onward
9272-0853	9272-0853.csv	3	Use file 9272_0853: First 6800 observations of file, GPS time ranges 12:31:00 - 14:24:13	Spike filtering before ob 11960, then apply new correlation after 11,960

Test ID	Associated Filenames	Phase	General Review Comments
8418-0097_1	8418-0097_1.csv	3	Only about 15 mins of data, MPS looks OK. First filter OK, MPS failed during 2nd filter
8418-0097_2	8418-0097_2.csv	3	Quite a bit of drop in system pressures, but still w/in range, pollutants and MPS proportionality look good. GF Filter MFC Flow jumps after filters are completed (i.e, after 5800 seconds), probably ok since filter sampling was completed.
8418-0377_1	8418-0377_1.csv	3	No PM, only 10 minutes of data. 1st (and only) filter invalid because MPS failed during the filter.
8418-0961	8418-0961.csv	3	Gaseous appears OK. MPS proportionality OK. Only 1st filter is valid, the rest should not be presented due to exhaust tubing burning and possibly affecting PM results.
8418-0377_2	N/A	3	No test data
0349-1836	0349-1836.csv	3	First 55 minutes are null (then SEMTECH rebooted). Approx 1.5 hours of data after that look good. MPS proportionality looks pretty good.
0349-2422	0349-2422.csv	3	Short test (just under 2 hrs), Low MPS sample flow proportionality (rsq 0.81 during filter on), otherwise looks OK
9272-3481	9272-3481A.csv	3	MPS proportionality poor at higher flows (this had a high exh mass flow rate). Otherwise, All looks pretty good. "Local Ambient Temp" measurements have high variability, and some seem to be higher than they should be, could be suspect. Thermocouple possibly in exhaust stream.
9272-3481	9272-3481B.csv	3	2nd part of the day (from 9272-3481_A). MPS proportionality poor at higher flows (this had a high exh mass flow rate). RPM in this session appears more erratic (about 0.4% of the RPM values are re-calculated to eliminate spikes). Temps here are high but appear more stable, although the increase in temp near the start of the test suggests the thermocouple could still be in the exhaust stream.
9272-2494_1	9272-2494_1.csv	3	Very short test (15 mins), only 1 grav filter. MPS proportionality OK. Cannot combine with 9272_2494_2 (separate days)
9272-2494_2	9272-2494_2A.csv	3	Local ambient temp 8-12C corresponds with actual ambient temp that am. MPS proportionality a bit poor at higher RPMs, but overall, this 1.5 hour session looks OK.
9272-2494_2	9272-2494_2B.csv	3	No operation for the first 96 minutes (engine turned off).
9272-0853	9272-0853.csv	3	MPS looks good, RPM has spikes then drops out.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
8418-0097_1	8418-0097_1.csv	3	
8418-0097_2	8418-0097_2.csv	3	
8418-0377_1	8418-0377_1.csv	3	
8418-0961	8418-0961.csv	3	
8418-0377_2	N/A	3	
0349-1836	0349-1836.csv	3	Exclude first 55 minutes of data
0349-2422	0349-2422.csv	3	
9272-3481	9272-3481A.csv	3	
9272-3481	9272-3481B.csv	3	
9272-2494_1	9272-2494_1.csv	3	
9272-2494_2	9272-2494_2A.csv	3	
9272-2494_2	9272-2494_2B.csv	3	None
9272-0853	9272-0853.csv	3	

					Idle Flowrate Eval (from plots)		
Test ID	**Associated Filenames**	**Phase**	**Some gaseous null during filters**	**Filter Auto Zeros?**	**Idle flowrate (SCFM)**	**Idle flowrate (kg/hr)**	**Idle RPM**
9272-0853	9272-0853A.csv	3	None	No		N/A	N/A
0062-0748	0062-0748.csv	3	None	No	68	139	900
0062-0748	0062-0748A.csv	3	None	No	75	153	900
0062-6092	0062-6092A.csv	3	Test A, Filters 1, 2, and 3	No	N/A	N/A	N/A
0062-6092	0062-6092B.csv	3	None	No	N/A	155	910

			Idle Flowrate Evaluation (from cals or plots)						
Test ID	**Associated Filenames**	**Phase**	**Idle flowrate (kg/hr)**	**Idle RPM**	**Idle RPM**	**Disp (L)**	**Idle Lookup Value (kg/hr)**	**Idle Calc Value**	**% diff**
9272-0853	9272-0853A.csv	3	N/A	N/A	N/A	11	188		N/A
0062-0748	0062-0748.csv	3	153	900	900	4.5	77	116	25%
0062-0748	0062-0748A.csv	3	153	900	900	4.5	77	116	25%
0062-6092	0062-6092A.csv	3	N/A	900	900	4.5	77	116	N/A
0062-6092	0062-6092B.csv	3	150	900	900	4.5	77	116	23%

			Max Flowrate Evaluation (from cals or plots)								
Test ID	**Associated Filenames**	**Phase**	**Measured Max flowrate (kg/hr)**	**Max RPM**	**Disp (L)**	**Max Lookup Value**	**Max Calc Value (kg/hr)**	**% diff**	**RPM Scale**	**RPM Spikes**	**RPM Invalid**
9272-0853	9272-0853A.csv	3	N/A	N/A		1570		N/A	N/A	N/A	No
0062-0748	0062-0748.csv	3	510	2400	4.5	730	584	-15%	OK	None	No
0062-0748	0062-0748A.csv	3	336	1920	4.5	730	467	-39%	OK	None	No
0062-6092	0062-6092A.csv	3	N/A	N/A	4.5	730	N/A	N/A	N/A	None	No
0062-6092	0062-6092B.csv	3	418	2260	4.5	730	550	-32%	OK	None	No

All RPM Corrections

Test ID	Associated Filenames	Phase	RPM Lost	Turbo? (yes or blnk)	PAMS or ECU?	New RPM Rqd?	RPM to Exh factor (kg/hr) to use
9272-0853	9272-0853A.csv	3	Yes			No	N/A
0062-0748	0062-0748.csv	3	None	Yes		No	N/A
0062-0748	0062-0748A.csv	3	None	Yes		No	N/A
0062-6092	0062-6092A.csv	3	NO RPM			Yes	RPM =5.63 x Ex, cap RPM at 2300
0062-6092	0062-6092B.csv	3	No			No	

Test ID	Associated Filenames	Phase	Time Range of valid RPM on which modeling is based	Time Ranges of invalid RPM to apply correction
9272-0853	9272-0853A.csv	3		N/A
0062-0748	0062-0748.csv	3		N/A
0062-0748	0062-0748A.csv	3		N/A
0062-6092	0062-6092A.csv	3	Use file 0062-6092_B: First 3200 observations of file, GPS time ranges from 17:29:38 - 18:22:50	all test
0062-6092	0062-6092B.csv	3		

Test ID	Associated Filenames	Phase	General Review Comments
9272-0853	9272-0853A.csv	3	no rpm, no pm, no exhaust mass flow rate, only 15 minutes of gaseous. Didn't apply RPM correction since we don't have exhaust flow rate on this under 15 minute test
0062-0748	0062-0748.csv	3	MPS proportionality looks OK, data looks OK too. 6 filters collected during this session. Combine with 0062_0748A.
0062-0748	0062-0748A.csv	3	Same MPS proportionality (looks OK), data here looks good too (but only use 1st filter, no PM after 1st filter in this session (7th filter overall). Engine off flowrate is around 14 SCFM, but this is limited to the low flow delta P sensors, so negligible impact on overall measurements or results.
0062-6092	0062-6092A.csv	3	MPS proportionality looks OK. No CO, CO2, O2, or RPM. Will use RPM / exhaust factors from session B.
0062-6092	0062-6092B.csv	3	About 1 hour of data, 1st 2 filters OK (don't use 3rd filter from this session). Some exhaust flow rate appears invalid, has been flagged. Use this RPM /exh correlation for session a.

Test ID	Associated Filenames	Phase	Observations to Exclude From Reporting
9272-0853	9272-0853A.csv	3	
0062-0748	0062-0748.csv	3	
0062-0748	0062-0748A.csv	3	
0062-6092	0062-6092A.csv	3	No CO, CO2, O2, or RPM.
0062-6092	0062-6092B.csv	3	New variable "suspect exhaust mass flow" flag applied for the following obs: 762 - 856, 1132 - 1147, 2256 - 2316, 3023 - 3076, also where "Corrected Exhaust Mass Flow Rate" is "-1.$" or other invalid character(s)