

# Kansas City PM Characterization Study

## Final Report

### Appendix O

### Round 1 Dynamometer PEMS

### Quality Control Summary

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

#### Sponsors:

National Renewable Energy Laboratory, U.S. Department of Energy  
Federal Highway Administration, U.S. Department of Transportation  
STAPPA-ALAPCO Emission Inventory Improvement Program  
Coordinating Research Council Inc. (Project No. E-69)

Prepared for EPA by  
Eastern Research Group, Incorporated  
Austin, TX

Bevilacqua-Knight Incorporated  
Oakland, CA

NuStats LLC  
Austin, TX

Desert Research Institute  
Reno, NV

EPA Contract No. GS 10F-0036K

October 27, 2006  
Revised April 2008 by EPA staff



United States  
Environmental Protection  
Agency

EPA420-R-08-009  
April 2008

Run#	Disp	Disp Bin	Make	Model	Model Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84032	2.2	2.1 to 2.5	Chevrolet	Cavalier	2001		x		x		x	No flowmeter flow or temp data.
84034	3.5	3.1 to 3.5	Isuzu	Trooper	1999							
84035	5.3	5.1 to 6.0	GMC	Yukon XL	2001							
84036	1.9	1.6 to 2.0	Ford	Escort LX	1995							
84037	5.8	5.1 to 6.0	Ford	F-250	1979							
84039	5.4	5.1 to 6.0	Ford	F-150 XLT	2001							
84040	2.5	2.1 to 2.5	Dodge	Spirit	1990							
84042	1.6	1.6 to 2.0	Honda	Civic	1996							
84043	1.5	0 to 1.6	Honda	Civic	1991							
84047	2.5	2.1 to 2.5	Mazda	626	2001							
84048	3	2.6 to 3.0	Dodge	Caravan SE	1989							
84050	2	1.6 to 2.0	Honda	Civic SI	2002				x			Avg exhaust temp is high (450F)
84051	2.2	2.1 to 2.5	Chevrolet	Corsica	1996							
84052	3.8	3.5 to 4.0	Oldsmobile	Cutlass Ciera	1988							
84054	4.3	4.1 to 5.0	GMC	Jimmy	1995							
84055	4	3.5 to 4.0	Jeep	Cherokee Sport	1998							
84056	3.3	3.1 to 3.5	Nissan	Frontier	2002							
84057	1.9	1.6 to 2.0	GM	Saturn	2001							
84058	3.5	3.1 to 3.5	Chrysler	300	1999				x			Avg exhaust temp is low (250C)
84060	3.8	3.5 to 4.0	Buick	LeSabre	1998							
84061	2.2	2.1 to 2.5	Chevrolet	Cavalier	1990							
84062	3.8	3.5 to 4.0	Buick	LeSabre	1998							
84063	1.9	1.6 to 2.0	GM-Saturn	Saturn	1996							
84064	3	2.6 to 3.0	Mercury	Villager LS	1994							
84066	2.5	2.1 to 2.5	Jeep	Wrangler	1995				x			Avg exhaust temp is high (480C)
84067	3.3	3.1 to 3.5	Dodge	Caravan	1995							
84068	3	2.6 to 3.0	Toyota	Solara SLE	2001							
84069	3.3	3.1 to 3.5	Dodge	Grand Caravan Sport	1997							
84071	2.3	2.1 to 2.5	GM	Pontiac Grand Am	1989							
84072	4.3	4.1 to 5.0	Chevrolet	S-10	2003							
84073	4.3	4.1 to 5.0	Chevrolet	Blazer	1995							
84074	2.6	2.6 to 3.0	Nissan	Pickup	1987				x			Avg exhaust temp is high (450C)
84076	4.9	4.1 to 5.0	Ford	Mustang	1968							
84077	1.6	1.6 to 2.0	Honda	Civic EX	1999			x				Suspect dilution: Avg CO + CO2 = 9.06%
84078	2.2	2.1 to 2.5	Honda	Accord	1997							
84079	2	1.6 to 2.0	Honda	Accord LX	1989		x		x		x	Average exhaust flow is > 2x average for all other similar displacement vehicles, avg exhaust temp is high (525C)
84081	3	2.6 to 3.0	Ford	Taurus	1988							
84082	3	2.6 to 3.0	Ford	Taurus SES	2003							
84083	2.3	2.1 to 2.5	Honda	Accord EX	2000							
84084	3.1	3.1 to 3.5	Chevrolet	Malibu LS	1998							
84086	3.5	3.1 to 3.5	Honda	Odyssey	2004				x			Avg exhaust temp is high (480C)
84087	2	1.6 to 2.0	Hyundai	Tiburon	2000							
84088	3.1	3.1 to 3.5	Chevrolet	Lumina	1998							
84090	4.6	4.1 to 5.0	Ford	Mustang	1999				x			Avg exhaust temp is low (210C)
84091	4.9	4.1 to 5.0	Cadillac	Seville	1991							

Run#	Disp	Disp Bin	Make	Model	Model Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84092	1.9	1.6 to 2.0	Saturn	SL1	1999							
84093	1.6	1.6 to 2.0	Nissan	Sentra GXE	1997							
84094	4	3.5 to 4.0	Ford	Explorer	1993							
84096	3.2	3.1 to 3.5	Isuzu	Rodeo SL	1999							
84097	3	2.6 to 3.0	Mercury	Sable LS	2002							
84098	3	2.6 to 3.0	Ford	Ranger	1999							
84099	3	2.6 to 3.0	Toyota	Avalon	1999							
84101	3	2.6 to 3.0	Toyota	Camry	1994							
84102	1.6	1.6 to 2.0	Honda	Civic	1999			x				Suspect diltion : Avg CO + CO2 = 8.77
84103	3	2.6 to 3.0	Nissan	Maxima	2000							
84104	3.3	3.1 to 3.5	Plymouth	Voyager	1998							
84105	1.8	1.6 to 2.0	Toyota	Corolla	1997							
84107	3.8	3.5 to 4.0	Buick	LeSabre	1989							
84108	1.5	0 to 1.6	Honda	Civic DX	1991							
84109	3.3	3.1 to 3.5	Plymouth	Voyager	1998							
84110	2	1.6 to 2.0	Ford	Contour	1995							
84111	4.3	4.1 to 5.0	Chevy	S-10	1996							
84113	3.1	3.1 to 3.5	Pontiac	Grand Prix	1993	x					x	File is missing or contains invalid test data
84114	3	2.6 to 3.0	Ford	Taurus	1988	x					x	File is missing or contains invalid test data
84115	2	1.6 to 2.0	Ford	Contour	1995		x		x		x	No flowmeter exhaust or temp data.
84116	4.3	4.1 to 5.0	Chevy	S-10	1996		x		x		x	No flowmeter flow or temp data.
84119	4	3.5 to 4.0	Jeep	Grand Cherokee	1995		x		x		x	No flowmeter flow or temp data.
84120	1.5	0 to 1.6	Honda	Civic	1984	x					x	File is missing or contains invalid test data
84121	2.9	2.6 to 3.0	Volvo	S80	2001		x		x		x	No flowmeter flow or temp data.
84122	3.3	3.1 to 3.5	Dodge	Grand Caravan SE	1999		x		x		x	No flowmeter flow or temp data.
84123	1.5	0 to 1.6	Honda	Civic	1984		x		x		x	No flowmeter data.
84125	4	3.5 to 4.0	Ford	Explorer XLT	1995	x					x	File is missing or contains invalid test data
84126	3.8	3.5 to 4.0	Ford	Thunderbird	1988		x	x	x		x	No flowmeter mass flow rate data. Avg dilution = 10.8%
84127	3.3	3.1 to 3.5	Chrysler	Town & Country	2000	x					x	File is missing or contains invalid test data
84128	2.2	2.1 to 2.5	Toyota	Camry LE	2000		x		x		x	No flowmeter flow or temp data.
84129	2.2	2.1 to 2.5	Toyota	Celica	1999		x		x		x	No flowmeter flow or temp data.
84131	2.2	2.1 to 2.5	Chevrolet	Cavalier	1997		x		x		x	No flowmeter flow or temp data.
84132	4	3.5 to 4.0	Jeep	Cherokee Sport	1993		x		x		x	No flowmeter flow or temp data.
84133	3.1	3.1 to 3.5	Buick	Century Limited	1998		x		x		x	No flowmeter flow or temp data.
84134	4.6	4.1 to 5.0	Mercury	Grand Marquis GS	1997							
84135	2.5	2.1 to 2.5	Ford	Probe	1993							
84137	4	3.5 to 4.0	Jeep	Cherokee Sport	1993		x		x		x	Average exhaust flow is > 50% less than average for all other similar displacement vehicles
84138	5.8	5.1 to 6.0	Ford	Bronco	1995	x					x	File is missing or contains invalid test data
84139	2	1.6 to 2.0	Ford	Escort ZX2	1999	x					x	File is missing or contains invalid test data
84140	4.3	4.1 to 5.0	Chevrolet	Blazer LS	2002							
84141	2.2	2.1 to 2.5	Honda	Accord	1990	x					x	File is missing or contains invalid test data
84143	3	2.6 to 3.0	Ford	Taurus	1988	x					x	File is missing or contains invalid test data
84144	3	2.6 to 3.0	Plymouth	Voyager	1993	x					x	File is missing or contains invalid test data
84145	4	3.5 to 4.0	Jeep	Cherokee	1990			x				Suspect diltion : Avg CO + CO2 = 8.45%
84146	2.3	2.1 to 2.5	Ford	Ranger XLT	1988							
84148	3.3	3.1 to 3.5	Dodge	Dynasty	1988		x		x		x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles. Avg exhaust temp is low (100C)
84149	2	1.6 to 2.0	Ford	Escort	2002							
84150	3.5	3.1 to 3.5	Honda	Odyssey	2000		x		x		x	No flowmeter mass flow rate data.
84151	2.3	2.1 to 2.5	Honda	Accord	2000							
84153	4.2	4.1 to 5.0	Ford	F150	2000				x			Avg exhaust temp is low (250C)

Run#	Disp	Disp Bin	Make	Model	Model Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84154	4.9	4.1 to 5.0	Ford	F150	1979		x				x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles
84156	2.3	2.1 to 2.5	Honda	Accord	2000							
84157	1.6	1.6 to 2.0	Nissan	Sentra	1994							
84160	2	1.6 to 2.0	Ford	Focus SE	2001							
84161	2.4	2.1 to 2.5	Volvo	850	1997		x		x		x	No flowmeter flow or temp data.
84162	2.6	2.6 to 3.0	Chrysler	LeBaron	1983		x		x		x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles, avg exhaust temp is high (500C)
84164	3.3	3.1 to 3.5	Plymouth	Voyager	1999							
84165	1.8	1.6 to 2.0	Mazda	Protégé	1991							
84166	2.3	2.1 to 2.5	Mercury	Topaz GS	1994							
84167	3	2.6 to 3.0	Ford	Ranger	1999	x					x	File is missing or contains invalid test data
84168	3.8	3.5 to 4.0	Buick	Regal	1996		x		x		x	No flowmeter flow or temp data.
84169	2.3	2.1 to 2.5	Mercury	Topaz GS	1994		x		x		x	No flowmeter flow or temp data.
84171	1.5	0 to 1.6	Honda	Civic DX	1988		x				x	Average exhaust flow is > 2x average for all other similar displacement vehicles
84172	2.8	2.6 to 3.0	Cadillac	Cimmaron	1986							
84173	3	2.6 to 3.0	Mercury	Sable	1996			x	x		x	Suspect diltion: Avg CO + CO2 = 9.01%, avg exhaust temp is low (185C)
84174	2.3	2.1 to 2.5	Mercury	Topaz	1994		x				x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles
84175	3.8	3.5 to 4.0	Pontiac	Bonneville	1988							
84177	3	2.6 to 3.0	Ford	Taurus	1988							
84178	2.2	2.1 to 2.5	Toyota	Camry	1997							
84179	4	3.5 to 4.0	Jeep	Cherokee	1998							
84180	3.8	3.5 to 4.0	Pontiac	Bonneville	1988							
84182	4.6	4.1 to 5.0	Ford	Thunderbird LX	1995				x			Avg exhaust temp is low (280C)
84183	1.8	1.6 to 2.0	Toyota	Corolla	2000							
84184	1.6	1.6 to 2.0	Honda	Civic	2000							
84185	1.8	1.6 to 2.0	Toyota	Corolla	1996							
84187	3	2.6 to 3.0	Ford	Taurus	1988							
84188	5	4.1 to 5.0	Chevy	Monte Carlo	1977							
84189	4.9	4.1 to 5.0	Ford	F150	1984							
84191	2.2	2.1 to 2.5	Toyota	Camry	2000							
84192	4.3	4.1 to 5.0	GMC	Sonoma SLS	2001							
84193	2.4	2.1 to 2.5	Hyundai	Santa Fe	2001							
84195	3.1	3.1 to 3.5	Chevy	Lumina	1999							
84196	4.3	4.1 to 5.0	GMC	Safari	1993							
84197	3.1	3.1 to 3.5	Buick	Regal	1990							
84198	1.9	1.6 to 2.0	Saturn	SL1	1994							
84200	1.9	1.6 to 2.0	Saturn	SL1	1994							
84201	2.8	2.6 to 3.0	Chevy	S-10 Truck	1985							
84205	4.2	4.1 to 5.0	Ford	F150 Truck	1998							
84206	5.7	5.1 to 6.0	Chevrolet	C 1500	1994							
84208	5	4.1 to 5.0	Lincoln	Towncar	1989				x		x	Avg exhaust temp is low (200C)
84209	2.4	2.1 to 2.5	Dodge	Stratus ES	1996							
84210	2.2	2.1 to 2.5	Mazda	MX-6	1988							
84211	2.3	2.1 to 2.5	Ford	Tempo	1986							
84213	3.8	3.5 to 4.0	Oldsmobile	Ninety Eight Regenc	1985							
84214	3.8	3.5 to 4.0	Pontiac	Bonneville	1994							
84215	3	2.6 to 3.0	Nissan	Maxima	1992							
84218	3	2.6 to 3.0	Ford	Taurus	1988			x			x	Suspect diltion: Avg CO + CO2 = 2.24%
84219	3.5	3.1 to 3.5	Chrysler	Concord	1994	x					x	File is missing or contains invalid test data
84220	1.9	1.6 to 2.0	Ford	Escort	1992	x					x	File is missing or contains invalid test data

Run#	Disp	Disp Bin	Make	Model	Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84221	5	4.1 to 5.0	Ford	Crown Victoria	1985	x					x	File is missing or contains invalid test data
84223	3.8	3.5 to 4.0	Dodge	Grand Caravan	2005	x					x	File is missing or contains invalid test data
84224	3	2.6 to 3.0	Ford	Taurus	2002	x					x	File is missing or contains invalid test data
84225	1.6	1.6 to 2.0	Honda	Civic	2000	x					x	File is missing or contains invalid test data
84227	3.1	3.1 to 3.5	Buick	Century	1997	x					x	File is missing or contains invalid test data
84228	2.3	2.1 to 2.5	Pontiac	Grand Am	1992	x					x	File is missing or contains invalid test data
84229	3.4	3.1 to 3.5	Oldsmobile	Silhouette	2000			x			x	Suspect diltion: Avg CO + CO2 = 1.04%
84230	1.3	0 to 1.6	Nissan	Sentra	1993	x					x	File is missing or contains invalid test data
84231	3.8	3.5 to 4.0	Oldsmobile	Eighty-Eight	1994	x					x	File is missing or contains invalid test data
84233	1.6	1.6 to 2.0	Toyota	Corolla	1989	x					x	File is missing or contains invalid test data
84234	1.8	1.6 to 2.0	Volkswagon	Cabriolet	1991	x					x	File is missing or contains invalid test data
84235	1.6	1.6 to 2.0	Geo	Prism	1990	x					x	File is missing or contains invalid test data
84236	2.3	2.1 to 2.5	Oldsmobile	Achieva	1992	x					x	File is missing or contains invalid test data
84238	2.8	2.6 to 3.0	Pontiac	6000	1988	x					x	File is missing or contains invalid test data
84240	3	2.6 to 3.0	Infiniti	I30	1998	x					x	File is missing or contains invalid test data
84241	2.5	2.1 to 2.5	Ford	Contour	1998	x					x	File is missing or contains invalid test data
84242	3.3	3.1 to 3.5	Plymouth	Voyager	1997							
84244	1.8	1.6 to 2.0	Ford	Escort	1993							
84245	2	1.6 to 2.0	Honda	Accord	1987		x		x		x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles, max exhaust temp very high too (800C)
84246	1.8	1.6 to 2.0	Eagle	Talon	1994				x			Avg exhaust temp is high (460C)
84248	2.9	2.6 to 3.0	Ford	Ranger	1987							
84250	1.9	1.6 to 2.0	Ford	Escort	1987							
84252	3	2.6 to 3.0	Ford	Taurus	2001							
84253	3	2.6 to 3.0	Mercury	Sable	1997							
84254	3.8	3.5 to 4.0	Buick	Regal	1992							
84256	4.3	4.1 to 5.0	Chevy	S-10	1989							
84257	2.3	2.1 to 2.5	Volvo	240 GL	1983							
84258	3.8	3.5 to 4.0	Oldsmobile	Delta 88	1991							
84259	3	2.6 to 3.0	Ford	Taurus	1988							
84261	2	1.6 to 2.0	Toyota	Camry	1989		x	x	x		x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles, dilution suspect (CO+CO2 = 4.3%). Avg exhaust temp is low (190C)
84262	3.8	3.5 to 4.0	Oldsmobile	Delta 88	1991							
84263	2	1.6 to 2.0	Dodge	Ram 50	1989							
84265	3	2.6 to 3.0	Buick	Century	1984							
84266	1.8	1.6 to 2.0	Kia	Sephia	2000							
84267	2	1.6 to 2.0	Chevy	Cavalier	1989							
84268	5	4.1 to 5.0	Ford	F150	1994			x				Suspect diltion: Avg CO + CO2 = 10.05%
84270	5	4.1 to 5.0	Mercury	Grand Marquis	1986			x				Suspect diltion: Avg CO + CO2 = 10.35%
84271	4.9	4.1 to 5.0	Buick	LeSabre	1979							
84272	3	2.6 to 3.0	Honda	Accord	2001							
84274	1.3	0 to 1.6	Ford	Aspire	1995							
84276	3.8	3.5 to 4.0	Buick	Electra Park Ave	1989							
84277	1.8	1.6 to 2.0	MG	MG	1978		x		x		x	Average exhaust flow is > 2x average for all other similar displacement vehicles, avg exhaust temp is high (480C)
84278	4.3	4.1 to 5.0	GMC	Jimmy	1990			x				Suspect diltion : Avg CO + CO2 = 8.45%
84279	3	2.6 to 3.0	Toyota	Camry	2001							
84280	2	1.6 to 2.0	Ford	Escort	1999							
84281	5.7	5.1 to 6.0	Chevy	Suburban	1995							
84283	3.7	3.5 to 4.0	Dodge	Ram	1986		x	x			x	Average exhaust flow is > 2x average for all other similar displacement vehicles. Avg dilution = 10.4%
84284	5	4.1 to 5.0	Chevrolet	Caprice Classic Wagon	1987							

Run#	Disp	Disp Bin	Make	Model	Model Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84285	1.6	1.6 to 2.0	Honda	Civic	2000							
84286	3.4	3.1 to 3.5	Oldsmobile	Silhouette	1997							
84287	4.3	4.1 to 5.0	GMC	Sierra	1995				x		x	Avg exhaust temp is high (510C)
84289	5	4.1 to 5.0	Oldsmobile	Oldsmobile Cruiser Station Wagon	1984							
84290	3	2.6 to 3.0	Ford	Taurus	1988							
84291	1.6	1.6 to 2.0	Honda	Civic	1997							
84292	2.2	2.1 to 2.5	Toyota	Camry	1997							
84293	2.3	2.1 to 2.5	Volvo	GL	1984							
84295	5	4.1 to 5.0	Chevy	Caprice	1987							
84296	1.6	1.6 to 2.0	Honda	Civic	1998							
84297	2.4	2.1 to 2.5	Dodge	Stratus	1996							
84298	5.9	5.1 to 6.0	Dodge	Durango	1999							
84300	3.8	3.5 to 4.0	Buick	LeSabre	1990							
84301	3.1	3.1 to 3.5	Pontiac	Grand Prix	1989		x		x		x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles. Avg exhaust temp is low (530C) Suspect diltion : Avg CO + CO2 = 10.10% Avg exhaust temp is high (480C) Avg exhaust temp is high (470C)
84302	4.9	4.1 to 5.0	Ford	F150	1993			x				
84303	3.4	3.1 to 3.5	Oldsmobile	Silhouette	2002				x			
84304	1.7	1.6 to 2.0	Honda	Civic	2001				x			
84305	3.1	3.1 to 3.5	Chevrolet	Malibu	1999							
84307	2.2	2.1 to 2.5	Honda	Accord	1992							
84308	2.3	2.1 to 2.5	Pontiac	Grand Am	1994							
84309	4.5	4.1 to 5.0	Mercedes	280 SE	1973							
84310	3.4	3.1 to 3.5	Chevy	Venture	2003		x		x		x	Average exhaust flow is approx 50% more than average for all other similar displacement vehicles, avg exh temp is high (490C)
84311	1.6	1.6 to 2.0	Toyota	Corolla	1989							
84312	2.3	2.1 to 2.5	Pontiac	Grand Am	1994							
84314	2.2	2.1 to 2.5	Plymouth	Sundance	1989							
84315	3	2.6 to 3.0	Plymouth	Voyager	1991							
84316	2	1.6 to 2.0	Dodge	Avenger	1996							
84317	2.4	2.1 to 2.5	Nissan	Altima	2000	x					x	File is missing or contains invalid test data
84318	1.6	1.6 to 2.0	Nissan	Sentra	1997							
84319	2.2	2.1 to 2.5	Toyota	Camry	1998							
84321	3	2.6 to 3.0	Toyota	Avalon	1996							
84322	2	1.6 to 2.0	Toyota	Camry	1990							
84323	1.6	1.6 to 2.0	Kia	Rio	2004	x					x	File is missing or contains invalid test data
84324	2.2	2.1 to 2.5	Toyota	Camry	1999							
84325	3	2.6 to 3.0	Nissan	Maxima	1997							
84327	3	2.6 to 3.0	Ford	Taurus	1998							
84328	3	2.6 to 3.0	Toyota	Avalon	1996							
84329	4	3.5 to 4.0	Jeep	Wrangler	1997		x				x	Average exhaust flow is > 50% more than average for all other similar displacement vehicles
84330	2.2	2.1 to 2.5	Chevy	Cavalier	2004							

Run#	Disp	Disp Bin	Make	Model	Model Year	Missing data	Flow Flag	Dilution Flag	Exh Temp Flag	Ambient Temp Flag	Suspect Data	Data Review Comments
84331	2.4	2.1 to 2.5	Saturn	Sedan	2001							
84332	2.4	2.1 to 2.5	Pontiac	Grand Am SE	1997		x				x	Average exhaust flow is > 50% less than average for all other similar displacement vehicles
84334	5	4.1 to 5.0	Chevrolet	Caprice-estate	1990							
84335	5	4.1 to 5.0	Mercury	Grand Marquis	1988			x				Suspect diltion : Avg CO + CO2 = 10.46%
84336	2.4	2.1 to 2.5	Toyota	Pickup	1987				x			Avg exhaust temp is high (490C)
84337	4	3.5 to 4.0	Ford	Ranger	2003							
84338	2.4	2.1 to 2.5	Saturn	Sedan	2001							
84339	3.8	3.5 to 4.0	Plymouth	Voyager	1999							
84341	2.4	2.1 to 2.5	Pontiac	Grand Am SE	1997							
84342	3	2.6 to 3.0	Toyota	Camry	1994							
84343	3.5	3.1 to 3.5	Kia	Sedona	2004							
84344	3	2.6 to 3.0	Toyota	Sienna	2000				x			Avg exhaust temp is high (440C)
84345	3.1	3.1 to 3.5	GM/Chevy	Lumina	1997							
84347	1.6	0 to 1.6	Toyota	Corolla	1995							Missing delays, fuel SG, etc.
84348	3	2.6 to 3.0	Ford	Taurus	1988							
84349	2.5	2.1 to 2.5	Chevrolet	Tracker	2003							
84350	3.1	3.1 to 3.5	GM/Chevy	Lumina	1997							
84351	2	1.6 to 2.0	Ford	Contour	1996							
84353	1.9	1.6 to 2.0	Saturn	Wagon	1993							
84354	4.9	4.1 to 5.0	Ford	F150	1989			x				Suspect diltion : Avg CO + CO2 = 9.71%
84355	3.1	3.1 to 3.5	Chevrolet	Lumina	2001							
84356	2.4	2.1 to 2.5	Pontiac	Grand Am	1997							
84357	1.9	1.6 to 2.0	Mercury	Tracer	1995							
84359	1.6	1.6 to 2.0	Toyota	Corolla	1992							
84360	3	2.6 to 3.0	Ford	Taurus	1988							
84361	3.5	3.1 to 3.5	Nissan	Maxima	2002							
84362	3	2.6 to 3.0	Ford	Taurus SE	1998							
84363	1.8	1.6 to 2.0	Toyota	Corolla	1996							
84365	3.8	3.5 to 4.0	Ford	Taurus	1993							
84366	3.3	3.1 to 3.5	Oldsmobile	Cutlass Wagon	1989				x			Avg exhaust temp is high (490C)
84367	4.5	4.1 to 5.0	Mercedes	Sel	1980							
84368	1.9	1.6 to 2.0	Saturn	SL1	1997							
84369	2.3	2.1 to 2.5	Volvo	850 Turbo	1996				x		x	Avg exhaust temp is high (490C)
84370	3	2.6 to 3.0	Ford	Taurus	1995							
84372	3	2.6 to 3.0	Toyota	Camry	1994			x				Suspect diltion : Avg CO + CO2 = 8.73%
84373	4.3	4.1 to 5.0	Chevrolet	Astro	1990							
84374	3	2.6 to 3.0	Ford	Taurus	1988							
84375	3.8	3.5 to 4.0	Ford	Windstar	2001							
84376	3.5	3.1 to 3.5	Honda	Odyssey	2000							
84377	2.2	2.1 to 2.5	Honda	Accord	1997							
84379	2.4	2.1 to 2.5	Pontiac	Grand Am GT	1998							
84380	4.6	4.1 to 5.0	Lincoln	Continental	1995				x		x	Avg exhaust temp is low (190C)
84381	4.6	4.1 to 5.0	Mercury	Marquis	1994							
84382	2	1.6 to 2.0	Volkswagon	Cabrio	1999							
84383	2.2	2.1 to 2.5	Toyota	Camry	1996							
84384	1.6	0 to 1.6	GEO	Prism	1996							Missing delays, fuel SG, etc.
84386	3	2.6 to 3.0	Nissan	Maxima	1990							
84387	3	2.6 to 3.0	Ford	Taurus	1988							