CTTS
CALIFORNIA TRUCK TESTING SERVICES

COMPREHENSIVE HDV TEST DATA (grams/mile, except for "Idle Test")

Vehicle: CalTrans#6100
Model year: 1994
Engine: Navistar 8.7L
Test weight: 18121kg

Vin# 1HTSDAAN7RH585903
Mileage:
Vehicle Type: Intrnl 4900 Dump
Emissions ID#: NA
Device: Alliance LV

RLMD: → (A+Bv+Cv^2+Dv^3)

Vehicle	Road
A. -465.322	-677.43590
B. 92.4284	75.72911
C. -7.483884	-0.59077
D. 4.557332E-03	4.183195E-03

Date: 07/10/02
Project: CEC
CVS flow rate: 3000cfm
Prepared by: Holly Haig-Ramage
Prepared for: CEC

Diesel	MossGass Super											
Test #	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG	Temp	RH%
C0206087	NYBC	Hot	0.000	0.027	0.233	41.886	4375.731	NA	0.027	2.230	70.6923	48.93%
C0206088	NYBC	Hot	0.053	0.029	0.040	42.178	4453.142	NA	0.029	2.285	71.6116	48.69%
C0206089	NYBC	Hot	0.054	0.066	0.000	42.215	4474.974	NA	0.066	2.274	71.81864	48.12%
	Average		0.036	0.040	0.091	42.093	4434.616	NA	0.040	2.263	71.374	48.65%
	Std Dev.		0.031	0.022	0.124	0.180	52.151	NA	0.022	0.029	0.600	0.005
	Covariant		0.866	0.540	1.365	0.004	0.012	NA	0.540	0.013	0.008	0.009
C0206082	Idle Grams	Hot	0.0000	0.3886	0.00060	0.02963	1.34395	← Idle in grams per second			66.6480	55.41%
C0206079	SS @ 60	Hot	0.065	0.051	0.000	6.246	2252.280	NA	0.051	4.518	67.44421	52.54%
C0206083	UDDS	Hot	0.009	0.017	0.000	9.661	2035.466	NA	0.017	4.999	68.3078	51.92%
C0206084	UDDS	Hot	0.007	0.017	0.025	9.280	2033.669	NA	0.017	5.004	69.1690	51.13%
C0206085	UDDS	Hot	0.011	0.017	0.013	9.297	2039.684	NA	0.017	4.989	70.1405	49.78%
	Average		0.009	0.017	0.013	9.413	2036.273	NA	0.017	4.997	69.206	50.93%
	Std Dev.		0.002	0.000	0.013	0.215	3.088	NA	0.000	0.008	0.917	0.011
	Covariant		0.202	0.011	0.988	0.023	0.002	NA	0.011	0.002	0.013	0.022

Diesel	Shell / Equilon GTL											
Test #	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG	Temp	RH%
C0206061	NYBC	Hot	0.071	0.000	0.097	42.923	4574.769	NA	0.000	2.224	76.40083	40.95%
C0206062	NYBC	Hot	0.072	0.444	0.000	40.412	4446.431	NA	0.444	2.288	78.3447	32.64%
C0206064	NYBC	Hot	0.054	0.140	0.000	41.776	4559.236	NA	0.140	2.232	75.49956	50.96%
	Average		0.066	0.195	0.032	41.704	4526.812	NA	0.195	2.248	76.748	41.52%
	Std Dev.		0.010	0.227	0.056	1.257	70.044	NA	0.227	0.035	1.454	0.092
	Covariant		0.150	1.167	1.732	0.030	0.015	NA	1.167	0.016	0.019	0.221
C0206060	Idle Grams	Hot	0.0001	0.0000	0.00000	0.02338	1.20458	← Idle in grams per second			75.59536	43.29%
C0206059	SS @ 60	Hot	0.099	0.041	0.000	6.185	2221.689	NA	0.041	4.580	73.7668	44.57%
C0206065	UDDS	Hot	0.026	0.030	0.000	9.172	2006.590	NA	0.030	5.071	76.1000	49.94%
C0206067	UDDS	Hot	0.028	0.059	0.000	9.411	2026.619	NA	0.059	5.021	78.0466	47.00%
C0206068	UDDS	Hot	0.034	0.008	0.000	9.225	2017.075	NA	0.008	5.045	79.5536	44.88%
	Average		0.030	0.033	0.000	9.270	2016.761	NA	0.033	5.046	77.900	47.27%
	Std Dev.		0.004	0.025	0.000	0.126	10.018	NA	0.025	0.025	1.731	0.025
	Covariant		0.130	0.779	0.000	0.014	0.005	NA	0.779	0.005	0.022	0.054

Diesel	MossGas GTL -- Diesel C											
Test #	Cycle	Type	PM	THC	CO	NOX	CO2	CH4	NMHC	MPG	Temp	RH%
C0206073	NYBC	Hot	0.018	0.000	0.000	42.886	4438.890	NA	0.000	2.292	73.65713	44.83%
C0206074	NYBC	Hot	0.058	0.051	0.002	42.670	4432.527	NA	0.051	2.296	74.70113	44.74%
C0206075	NYBC	Hot	0.058	0.019	0.000	42.328	4665.023	NA	0.019	2.181	75.36851	44.14%
	Average		0.041	0.024	0.001	42.594	4512.480	NA	0.024	2.256	74.576	0.446
	Std Dev.		0.021	0.026	0.001	0.279	132.158	NA	0.026	0.065	0.863	0.004
	Covariant		0.495	1.098	1.732	0.007	0.029	NA	1.098	0.029	0.012	0.008
C0206076	Idle Grams	Hot	0.0000	0.0000	0.00000	0.02752	1.19849	←Idle in grams per second			75.0488	45.28%
C0206077	SS @ 60	Hot	0.118	0.048	0.000	6.417	2223.888	NA	0.048	4.575	75.15636	44.33%
C0206070	UDDS	Hot	0.011	0.006	0.020	9.440	2002.629	NA	0.006	5.081	71.3058	46.92%
C0206071	UDDS	Hot	0.013	0.001	0.008	9.340	2017.597	NA	0.001	5.043	72.6783	43.81%
C0206072	UDDS	Hot	0.024	0.028	0.017	9.249	2020.563	NA	0.028	5.036	75.3672	41.18%
	Average		0.016	0.011	0.015	9.343	2013.596	NA	0.011	5.053	73.117	43.97%
	Std Dev.		0.007	0.014	0.006	0.095	9.613	NA	0.014	0.024	2.066	0.029
	Covariant		0.437	1.248	0.422	0.010	0.005	NA	1.248	0.005	0.028	0.065

Diesel	"Baseline" Chevron Diesel #2											
Test #	Cycle	Type	PM	THC	CO	NOX	CO2	CH4	NMHC	MPG	Temp	RH%
C0206016	NYBC	Hot	1.262	1.334	10.604	57.405	4858.046	NA	1.334	2.086	77.2236	41.85%
C0206017	NYBC	Hot	1.092	1.182	10.105	55.373	4475.721	NA	1.182	2.264	78.3245	42.06%
C0206018	NYBC	Hot	1.146	1.269	10.845	56.124	4484.602	NA	1.269	2.258	79.7015	41.23%
	Average		1.167	1.262	10.518	56.301	4606.123	NA	1.262	2.203	78.417	42%
	Std Dev.		0.087	0.076	0.377	1.028	218.217	NA	0.076	0.101	1.242	0.004
	Covariant		0.074	0.060	0.036	0.018	0.047	NA	0.060	0.046	0.016	0.010
C0206019	Idle Grams	Hot	0.0001	0.0002	0.00671	0.03181	1.25269	←Idle in grams per second			82.1710	39.25%
C0206020	SS @ 60	Hot	0.472	0.177	1.730	12.507	2217.727	NA	0.177	4.582	85.4980	32.16%
C0206011	UDDS	Hot	0.441	0.295	2.397	15.790	2000.954	NA	0.295	5.074	74.6044	46.91%
C0206012	UDDS	Hot	0.410	0.307	2.224	15.841	1952.395	NA	0.307	5.200	75.6573	46.86%
C0206015	UDDS	Hot	0.414	0.322	2.154	16.072	1956.327	NA	0.322	5.190	75.5261	43.83%
	Average		0.422	0.308	2.258	15.901	1969.892	NA	0.308	5.155	75.263	45.87%
	Std Dev.		0.017	0.013	0.125	0.150	26.972	NA	0.013	0.070	0.574	0.018
	Covariant		0.040	0.043	0.055	0.009	0.014	NA	0.043	0.014	0.008	0.038

Diesel	Chevron Diesel #2 Exhaust sample with added intake emissions											
Test #	Cycle	Type	PM	THC	CO	NOX	CO2	CH4	NMHC	MPG	Temp	RH%
C0206101	NYBC	Hot	0.035	0.338	0.308	42.996	5011.197		0.338	2.030	70.6982	52.28%
C0206097	Idle Grams	Hot	0.0000	0.0004	0.00708	0.03095	1.47995	← Idle in grams per second			68.0754	55.80%
C0206095	SS @ 40	Hot	0.016	0.000	0.000	7.636	1350.856		0.000	7.533	66.0132	57.28%

Diesel	Chevron Diesel #2 Increase of ambient emission to "Intake"											
Test #	Cycle	Type	PM	THC	CO	NOX	CO2	CH4	NMHC	MPG	Temp	RH%
C0206101	NYBC	Hot									70.6982	52.28%
C0206097	Idle Grams	Hot						← Idle in grams per second			68.0754	55.80%
C0206095	SS @ 40	Hot									66.0132	57.28%

*** The mass calculation for the introduced emissions are not feasible, unless the total volume injected is known. Hence, the added intake results are only in ppm.**

Diesel	Chevron Diesel #2 pre-addition of external engine intake emissions With Cat "Baseline"											
Test #	Cycle	Type	PM	THC	CO	NOX	CO2	CH4	NMHC	MPG	Temp	RH%
C0206098	NYBC	Hot	0.071	0.039	0.074	50.253	4874.582		0.039	2.087	69.1298	54.79%
C0206096	Idle Grams	Hot	0.0000	0.0006	0.00638	0.03094	1.34278	← Idle in grams per second			66.5415	56.86%
C0206094	SS @ 40	Hot	0.005	0.000	0.000	8.454	1313.389		0.000	7.748	64.96	58.92%

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SUMMARY HDV TEST RESULTS & FUEL COMPARISONS

(Results in Gram/Mile, Except for Idle Test)

Vehicle: CalTrans#6100
Model year: 1994
Engine: Navistar 8.7L
Test weight: 18121kg

Vin# 1HTSDAAN7RH585903
Mileage:
Vehicle Type: Intrnl 4900 Dump
Emissions ID#: NA
Device: Alliance LV

Test Fuel:	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG
Chevron Diesel #2	NYBC	Hot	1.167	1.262	10.518	56.301	4606.123	NA	1.262	2.2027
MossGas Super	NYBC	Hot	0.036	0.040	0.091	42.093	4434.616	NA	0.040	2.2630
MossGas (GTL)	NYBC	Hot	0.041	0.024	0.001	42.594	4512.480	NA	0.024	2.2563
Shell/Equilon	NYBC	Hot	0.066	0.195	0.032	41.704	4526.812	NA	0.195	2.2480

Test Fuel:	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG
Chevron Diesel #2	UDDS	Hot	0.422	0.308	2.258	15.901	1969.892	NA	0.308	5.1547
MossGas Super	UDDS	Hot	0.009	0.017	0.013	9.413	2036.273	NA	0.017	4.9973
MossGas (GTL)	UDDS	Hot	0.016	0.011	0.015	9.343	2013.596	NA	0.011	5.0533
Shell/Equilon	UDDS	Hot	0.030	0.033	0.000	9.270	2016.761	NA	0.033	5.0457

Test Fuel:	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG
Chevron Diesel #2	Idle Grams	Hot	0.000	0.000	0.007	0.032	1.253	<-- Idle in grams per second		
MossGas Super	Idle Grams	Hot	0.000	0.389	0.001	0.030	1.344	<-- Idle in grams per second		
MossGas (GTL)	Idle Grams	Hot	0.000	0.000	0.000	0.028	1.198	<-- Idle in grams per second		
Shell/Equilon	Idle Grams	Hot	0.000	0.000	0.000	0.023	1.205	<-- Idle in grams per second		

Test Fuel:	Cycle	Type	PM	THC	CO	NOX	CO_2	CH4	NMHC	MPG
Chevron Diesel #2	SS @ 60	Hot	0.472	0.177	1.730	12.507	2217.727	NA	0.177	4.5820
MossGas Super	SS @ 60	Hot	0.065	0.051	0.000	6.243	2252.280	NA	0.051	4.5160
MossGas (GTL)	SS @ 60	Hot	0.118	0.048	0.000	6.417	2223.888	NA	0.048	4.5750
Shell/Equilon	SS @ 60	Hot	0.099	0.041	0.000	6.185	2221.689	NA	0.041	4.5800