























	Ve	ntilation Pa	rameters	
Total ain was main	flow rate throug intained constan	gh D-drift it:	Mode	Dilution Ratio
5.69 ± 0.06 m ³ /s (12056.4 ± 118.7 ft ³ /min)		R50	148 149	
 This resulted in the following dilution ratios and ambient 				
			150	186
conditions:			I100	188
Mode	Air Temperature @ LFE	Air Temperatur @ Downstream Station	e Relative Humidity @ LFE	Relative Humidity @ Downstream Station
	°C	°C	%	%
Minimum	10.5	14.7	28.3	23.0
Maximum	18.7	22.3	81.5	70.7













Test Modes					
Mode	Description	Engine Speed	Torque	Power	
		rpm	Nm	kW	
R50	Rated speed 50% load	2950	55.6	17.2	
R100	Rated speed 100% load	2950	111.2	34.3	
I50	Intermediate speed 50% load	2100	69.1	14.9	
I100	Intermediate speed 100% load	2100	136.9	30.6	
				Tes	

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		Fuel		
Test		Method	Result	Units
BTU, Net		ASTM D-240	43468	kJ/kg
Cetane Number		ASTM D-613	61.8	-
Density		ASTM D-4052	0.8038	gm/ml
Flash Point, PMCC		ASTM D-93A	62.2	°C
Hydrocarbon Typ	e			
	Aromatics	ASTM D-1319	7.2	LV%
	Olefins	ASTM D-1319	1.1	LV%
	Saturates	ASTM D-1319	91.7	LV%
Oxygen Content			3.45	Wt. %
Sulfur Content		ASTM D-5453	11	mg/kg











Size Distribution of Aerosols Measured at Downstream







Results Indicate Strong Relationship between Size Distributions and Exhaust Temperatures

	DPFs, DOC, Muffler		DFEs	
Mode	Exhaust Temperature at Inlet of Device	Temperature at Outlet from Device	Exhaust Temperature at Inlet of Device	Temperature at Outlet from Device
	°C	°C	°C	°C
R 50	306	258	200	154
R100	529	436	329	242
150	254	216	160	125
I100	485	402	313	234



























Conclusion

- The percentages of NO₂ in total NO_x are found to be strongly dependent on engine operation mode / exhaust temperature.
- The four fold increase in percentages of NO₂ in total NO_x over baseline case was observed for the DOC when the engine was operated at R100 and I100 (high exhaust temperature) modes. The same DOC did not promote oxidation of NO to NO₂ in the cases when engine was operated at the lower temperature R50 and I50 modes.
- The substantial increase in NO₂ fraction in total NO_x was observed for DFE#1 and DFE#2 when the engine was operated at the I50 mode.







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