Test Report

Lovato Autogas Pty Ltd

ADR79/01

Nissan Navara (YD25)

Vipac Reference: 30V-10-0055 -TRP- 450699-0
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Vipac Engineers & Scientists Ltd
Melbourne, Australia

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1. INTRODUCTION

Vipac Engineers & Scientists (TFN: 4009) was commissioned by Lovato Autogas Pty Ltd to undertake an ADR79/01 test (Emission Control For Light Vehicles) on a 2009MY Nissan Navara. The single Type I Exhaust Emission test was undertaken in order to verify the conformance of an aftermarket Liquefied Petroleum Gas Vapour Injection Kit (LPG over Diesel) – DGA (Diesel Gas Australia) YD25 System manufactured & installed by the client. The test was conducted at Vipac's Port Melbourne Vehicle Emissions Test facility during the period 11th - 12th March 2010.

DGA YD25 PRINCIPLE COMPONENTS
DGA ECU With Appropriate YD25 System
Lovato Regulator, Filter & Injector
Manchester LPG Tank And Standard Delivery System

Table 1: Principle Components

The vehicle was tested using an equivalent inertia figure of 2040kg, with a road load power absorption figure at 80km/h of 11.18kW as outlined within the table of paragraph 3.2.1 Annex 4 – Appendix 2 with respect to an N1 (III) vehicle type.

The fuels used for the exhaust & evaporative emission tests were commercially available ultra low sulphur diesel fuel & commercially available liquefied petroleum gas.

2. TEST VEHICLE SPECIFICATIONS

Parameter	Detail
Manufacturer	NISSAN MOTOR COMPANY
Model	Navara
Odometer	7882km
Build date	2009
Vin number	MNTUCUD40A0000890
Engine number	YD25-159151T
Engine model & type	YD25
Transmission	4 Speed Automatic
Tyre sizes	235/70 R-16 (M&S)
Tyre pressure	230kPa
Kerb mass	1980kg
Reference mass	2080kg
Equivalent inertia	2040kg
Road load @ 80 kph	11.18kW
Road load coefficient a	11.31N
Road load coefficient b	0.07683N/(km/h^2)

Table 2: Test Vehicle Specifications

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3. TEST EQUIPMENT

Equipment	Manufacturer	Model	Serial Number	Last Calibrated
Carbon Monoxide (CO) Analyser	Signal Instruments	7100FM	17845	March 2010
Total Hydrocarbon (THC) Analyser	Signal Instruments	3000HM	15020	March 2010
Oxides Of Nitrogen (NOx) Analyser	Signal Instruments	4000VM	14946	March 2010
Carbon Dioxide (CO_2) Analyser	Signal Instruments	7200FM	17844	March 2010
CVS (Constant Volume Sampling) System	Beckman Industries	Critical Flow Venturi	178	January 2010
Total System Verification	Horiba CFO (Constant Flow Orifice)	CFO-201	100202	January 2010
Inertia Simulation Dynamometer	Cirrus Technologies		Build 03/2007	March 2010 Pre-Test Coastdown

Table 3: Test Equipment

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4. TEST RESULTS

Exhaust Emissions (g/km) ADR79/01 - NA vehicles (Diesel)					
	CO	**THC**	**NOx**	**THC & NOx**	**PM10**
Limits	**0.74**	**-**	**0.39**	**0.46**	**0.06**
Test	0.04	0.01	0.31	0.32	0.01

Table 4: Exhaust Emissions Result

Fuel Consumption ADR81/02		
	CO_2 (g/km)	**Litres/100km**
Urban	342.1	12.9
Extra Urban	218.6	8.3
Combined	**263.9**	**10.0**

Table 5: Fuel Consumption Result

5. CONCLUSION

The exhaust emissions test results of the vehicle when tested in accordance with the Type I Test (Average Tailpipe Emissions) procedures incorporated within directive ADR79/01 were within the limits specified for Carbon Monoxide (CO), Total Hydrocarbons (THC), Oxides Of Nitrogen (NOx) and Particulate Matter (PM10) for an NA vehicle of reference mass <1760kg. The published results do not include the relevant Deterioration Factors utilised in lieu of the Type V Test (Durability Of Anti-Pollution Devices).

The vehicle as presented conforms to the limits & criteria for an NA vehicle with regards ADR79/01.

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