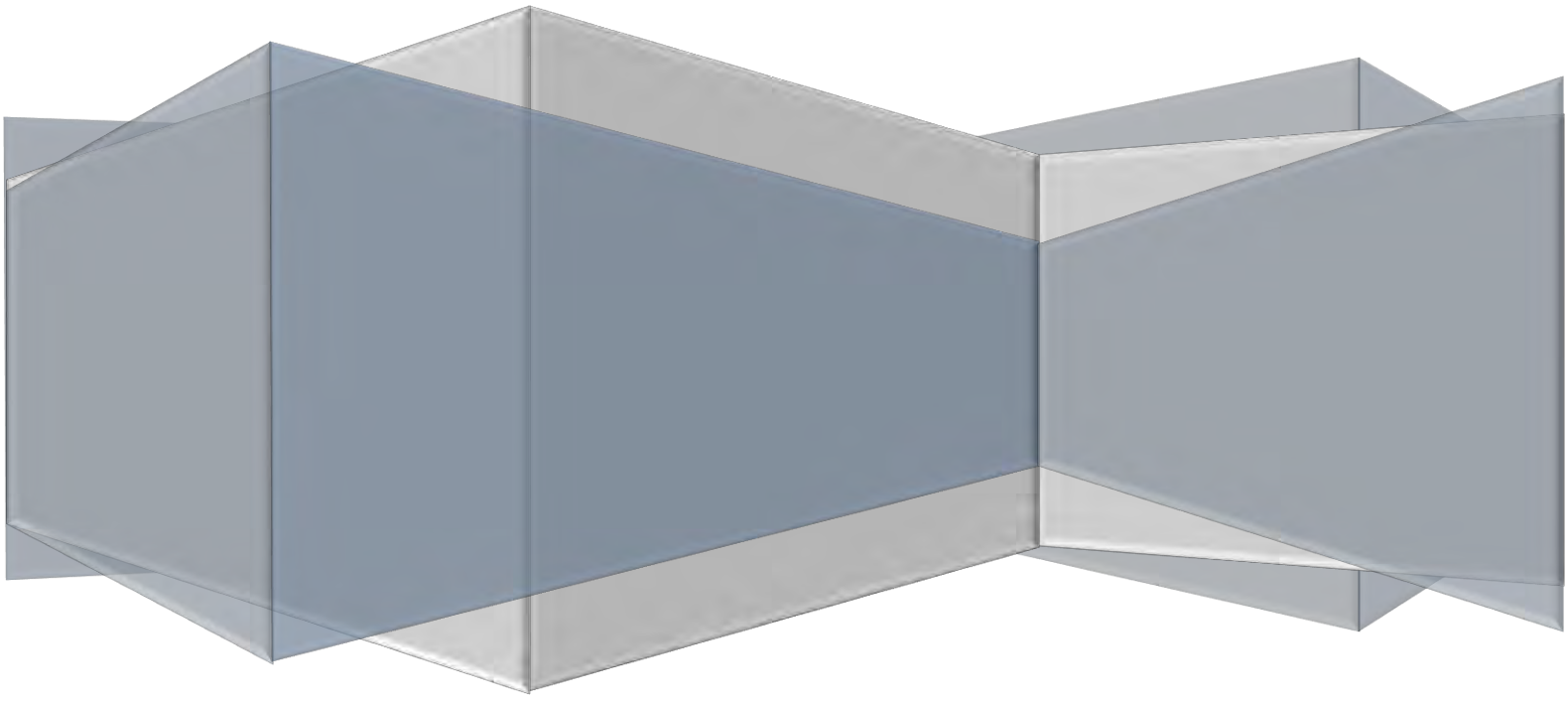
Revision A

Emissions Report – Mitsubishi Trition

ADDF-REP-TA-0003

Michelle Lam



EMISSIONS REPORT – MITSUBISHI TRITION

ADDF-REP-TA-0003

Revision Number: A
Revision Date: 24/01/2017

PREPARED BY

Name	Designation	Signature	Date
Michelle Lam	Senior Chemical / Process Engineer (Chartered Professional Engineer Engineering Council UK (CEng) Reg. No. 594288, MIChemE No. 99887878)		24/01/2017

REVIEWED BY

Name	Designation	Signature	Date
Justin West	Australasian Business Development Manager		

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

The major air pollutants are caused by emissions of exhaust from motor vehicles which are principal source that emits nitrogen oxides (NOx) and carbon monoxide (CO) in most capital cities worldwide. These ambient air pollutants, CO and NOx are part of the main concern pollutants as listed in the 1998 Ambient Air Quality National Environmental Protection Measure (Ambient Air Quality NEPM) and are both in top 3 ranks in the National Pollution Inventory Risk Ranking. The pollutants are of major concern as they pose different levels of risk to human health and adversely impacts the environment.

With regards to lowering and limiting these harmful vehicle emissions, Fuel Conditioner Concentrate (FCC), FCC is a non-hydrocarbon fuel conditioner that assists in achieving clean fuel, improves performance and increasing fuel efficiency, whilst most importantly lowering emissions of air pollutants.

Key summary based on the technical analysis of the emissions from Mitsubishi Triton Ute (Att. 1) with vehicle running on fuel without FCC additive (benchmark) and with addition of FCC:

CO emissions:

- Emissions of CO pollutant is ranked at No. 3 in the National Pollution Inventory Risk Ranking with a high health hazard factor (Ref. 7).
- A substantial 30% reduction of CO emissions at maximum rated power which reduces the CO concentration from 413 ppm to 252 ppm after addition of FCC.

NOx emissions:

- Emissions of NOx pollutant is ranked highest i.e. No. 1 in the National Pollution Inventory Risk Ranking with the highest environmental hazard factor (Ref. 7).
- A notable significant 79% reduction of NOx emissions at minimum rated power which reduces the NOx concentration from 130 ppm to 27 ppm after addition of FCC.
- At maximum rated power, a 10% reduction of NOx emissions is observed with NOx concentration reduced from 151 ppm to 136 ppm.

2 INTRODUCTION

The major air pollutants are caused by emissions of exhaust from motor vehicles which are principal source that emits nitrogen oxides and carbon monoxide in most capital cities worldwide. Traffic contributes more than 75% of carbon monoxide emissions and most emissions of nitrogen oxides (Ref. 7).

Statistics for Australia capital cities for year 2000–01 indicates that motor vehicles are estimated to have contributed 47% of nitrogen oxide levels in Perth and 82% in Southeast Queensland. Motor vehicles are estimated to be the source of more than 60% of carbon monoxide levels for all capital city airsheds other than Darwin (Ref. 7).

These air pollutants pose different levels of risk to human health and adversely impacts the environment. The ambient air pollutants of most concern in Australia are listed in the 1998 Ambient Air Quality National Environmental Protection Measure (Ambient Air Quality NEPM) which are carbon monoxide, nitrogen oxides, volatile organic compounds, lead, sulfur dioxide and particulate matter of less than 10 microns (PM10).

In environmental view of limiting harmful vehicle emissions, FCC is a non-hydrocarbon fuel conditioner that cleans fuel and improves performance whilst lowering emissions and increasing fuel efficiency.

2.1 BACKGROUND

FCC is a blend of blend of surfactants (detergents), oxygenates and corrosion inhibitors developed to meet the challenge of today's high performance engines. The Primary benefits of FCC are:

- Solubilises liquid water into the fuel.
- Reduces or eliminates the conditions favourable to the growth of microorganisms.
- Stabilises fuel by inhibiting the formation of gums and varnish.
- Inhibits corrosion of fuel system components.
- Promotes a uniform fuel spray pattern in combustion chambers, thus reducing carbonisation and improving combustion efficiency.
- Inhibits formation of corrosive acids in combustion chambers.

2.2 DOCUMENT SCOPE

This document scope provides technical analysis for comparison of emissions from vehicle type Mitsubishi Triton running on fuel before and after addition of fuel additive, herein referred to as FCC. Analysis is made on emissions of major pollutants as listed below:

- Carbon Monoxide and
- Nitrogen Dioxide.

2.3 AIR QUALITY STANDARD

The ambient air pollutants of most concern in Australia are listed in the 1998 Ambient Air Quality National Environmental Protection Measure (Ambient Air Quality NEPM) and the National Air Quality Standard is summarised in Table 2.1 (Att. 2):

Table 2.1: Australia National Air Quality Standard

Pollutant	Averaging Period	Maximum (ambient) concentration
Carbon monoxide	8 hours	9.0 ppm
Nitrogen dioxide	1 hour	0.12 ppm
	1 year	0.03 ppm
Photochemical oxidants (as ozone)	1 hour	0.10 ppm
	4 hours	0.08 ppm
Sulfur dioxide	1 hour	0.20 ppm
	1 day	0.08 ppm
	1 year	0.02 ppm
Lead	1 year	0.50 µg/m³
Particles as PM10	1 day	50 µg/m³

2.4 POLLUTANT INVENTORY RISK RANKING

The National Environment Protection Council Technical Advisory Panel (formed to recommend substances for inclusion in the National Pollutant Inventory to assessed the risks to human health and the environment from exposure to a substance listed in the inventory) risk assessments for the major air pollutants are summarised in Table 2.1.

Table 2.1 National Pollutant Inventory Risk Ranking (Selected Air Pollutants (Ref. 7))

Pollutant	*Health hazard*	*Environmental hazard*	*Combined rank*	*National Pollution Inventory rank*[1]
Nitrogen oxides—N_2O NO NO_2	1.5	3.0	4.5	1
Carbon monoxide—CO	2.0	0.8	2.8	3
Sulfur dioxide—SO_2	1.5	1.3	2.8	3
PM_{10}	1.2	1.3	2.5	7
Lead and compounds	1.7	1.5	3.2	11
Non-methane volatile organic compounds				
Xylene	1.3	1.0	2.3	9
Benzene	2.3	1.0	3.3	14
Toluene	1.3	1.3	2.6	33

Notes The approach used to assess pollutants results in some substances receiving the same National Pollution Inventory rank. This ranking also considers human exposure to the pollutant. Excluded from the National Environment Protection Council list of approximately 400 substances were substances that had been banned or scheduled for phase-out, agriculture and veterinary chemicals, and those substances where other reporting was in place because of their ozone depleting or greenhouse effects.

Source National Pollution Inventory Technical Advisory Panel (1999); National Pollution Inventory substance profiles (Environment Australia undated).

3 ABBREVIATIONS & DEFINITIONS

3.1 ABBREVIATIONS

Abbreviations	Definition
AddFuel	AddFuel Pty. Ltd.
ADR	Australia Design Rules (Control of Vehicle Emissions)
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EPA	Environmental Protection Agency
FCC	Fuel Conditioner Concentrate
H_2O	Water
NOx	Nitrogen Oxide
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
PM	Particulate Matter
SO_2	Sulfur Dioxide
VOC	Volatile Organic Compound

3.2 POLLUTANT DESCRIPTION

The major pollutant assessed and its' adverse effects on human health and environment are described and summarised as below:

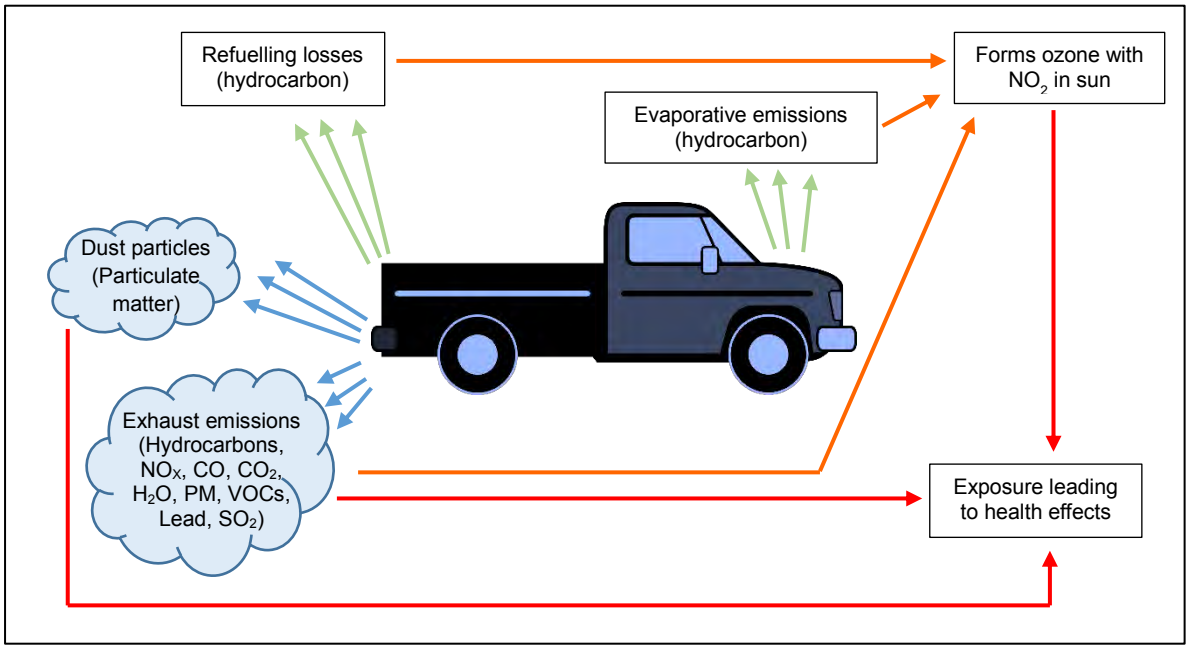
Pollutant		Description	Impact / Adverse Effects
CO	Carbon Monoxide	Carbon monoxide (CO) is generated from combustion process as a component of motor vehicle exhaust. This gaseous pollutant is produced when there is insufficient oxygen present in the combustion chamber which results in a partially oxidised fuel.	CO's toxicity stems from its ability to reduce the oxygen-carrying capacity of blood by preferentially bonding to haemoglobin and impacts human health.
NOx	Nitrogen Oxide	Nitrogen oxides (NOx), the term used to describe the sum of NO, nitrogen dioxide (NO_2), and other oxides of nitrogen. NOx is the sum of NO and NO_2 contents in exhaust gas (NOx = NO + NO_2).	While NO is non-toxic by itself, it contributes to ozone formation. "NO2 can irritate the lungs and lower resistance to respiratory infection…" (Ref. 6). Under some conditions, NOx is also an important precursor to particulate matter (Ref. 2), haze and acid rain.
NO	Nitric Oxide	NO makes up the largest content / contributor in exhaust gas (Ref. 4).	
NO_2	Nitrogen Dioxide	NO_2 in proportion 5-10% of NO (Ref. 4).	

3.3 VEHICLE EMISSIONS AND HEALTH EFFECTS

Pollutants are formed during the combustion process in the vehicle's engine. There is no direct relationship between regulated pollutants produced by the engine, tailpipe emissions of these pollutants, and vehicle mass or size.

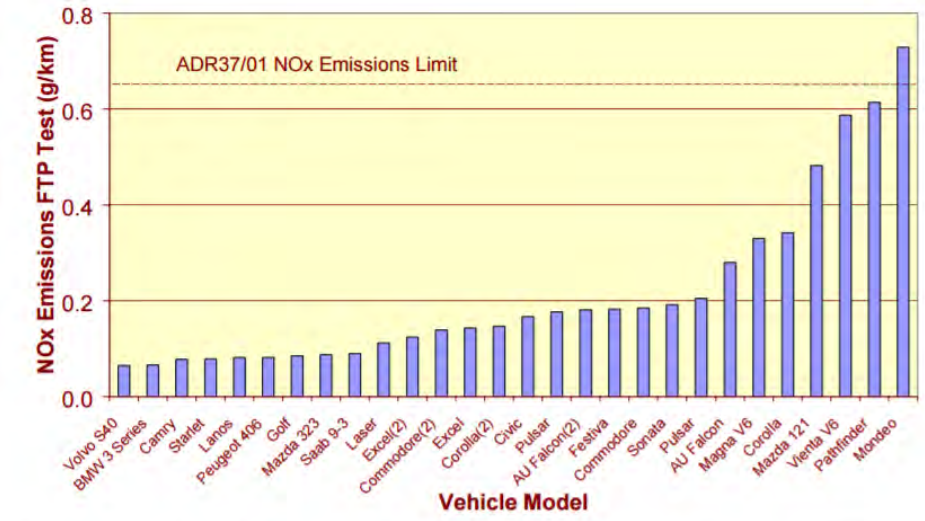
Non-combustion sources of ambient air pollution can include the evaporation of the fuel itself and vehicle movement can generate emissions of road dust and brake lining dust. The impact on human health from vehicle emissions are summarised in Figure 3.1:

Figure 3.1: Transport emissions and health effects



In Australia performance-based standards limit the amount of specific air pollutants that may be emitted by new vehicles. Each new vehicle model is required to comply with Australian Design Rules (Australian Design Rules are national standards under the Motor Vehicle Standards Act 1989) before it is supplied to the Australian market. Nitrogen Oxide emissions ADR37/01 Vehicles (Australia Design Rules compliance vehicles) are included in Figure 3.2 for emissions of CO for various vehicle make.

Figure 3.2: Nitrogen Oxide Emissions from ADR37/01 Vehicles on the ADR37/01 Test (Ref. 7)



Note Most vehicles in the Comparative Vehicle Emissions Study were designed to comply with ADR37/01.

Source Australian Government Department of Transport and Regional Services 2001

3.4 REFERENCES

The references used in this document are:

1. Certificate of Analysis Submission No: 58649 (PO: 3806), 25-Oct-2015 (Att. 1).
2. Diesel Fuel Technical Review, Chevron.
3. https://www.environment.gov.au/protection/air-quality/air-quality-standards
4. http://fluid.wme.pwr.wroc.pl/~spalanie/dydaktyka/combustion_en/NOx/NOx_formation.pdf
5. Clean Coal Engineering Technology, Miller, Bruce G., 2011
6. “Air Trends, September 2003 Report: National Air Quality and Emissions Trends Report, 2003 Special Studies Edition,” U.S. EPA, http://www.epa.gov/air/airtrends/aqtrnd03/
7. Health impacts of transport emissions in Australia: Economic costs, Australia Government, Department of Transport and Regional Services (https://bitre.gov.au/publications/2005/files/wp_063.pdf)

3.5 ATTACHMENTS

1. Intertek Geotech, Certificate of Exhaust Gas Analysis Serial No: MMAJYKL10GH013995 (before addition of FCC and after addition of FCC).
2. Australia Government Department of Environmental and Energy, Air Quality Standards in Australia.

4 EMISSIONS

The emissions from Mitsubishi Triton Ute (Attachment 1) with specifications as below are assessed with vehicle running on fuel without FCC additive (benchmark) and with addition of FCC. The Mitsubishi Triton's exhaust gas emission data is recorded at vehicle's minimum rated power (idle) and at maximum rated power (high idle).

Description	Data
Unit & Engine Make	Mitsubishi
Registration No.	1GCO 174
Model	Triton
Engine No.	MMAJYKL10GH013995
Engine Capacity	2400cc
Engine Power	133 kW
Total Hours / km Run	9,836 kms
Original Engine	Yes
Exhaust Treatment Type	Standard Turbo Diesel
Bank	Straight 4 Cylinder

4.1 CARBON MONOXIDE (CO)

4.1.1 DESCRIPTION

Carbon monoxide (CO) is generated from combustion process as a component of motor vehicle exhaust. This gaseous pollutant is produced when there is insufficient oxygen present in the combustion chamber which results in a partially oxidised fuel. High levels of carbon monoxide can be caused by a too rich fuel mixture, incorrect idle speed, faulty air cleaner or positive crankcase ventilation (PCV) valve, incorrect fuel pressure or faulty carburettor/injection system.

4.1.2 ANALYSIS

Based on the emissions test report (Att. 1), Mitsubishi Trition running at minimum rated power (idle) produces CO in the exhaust at a concentration of 7 ppm and increases slightly to 12 ppm with addition of FCC. This is a minimal 5 ppm increase and considering that the vehicle is idle, this concentration of emission is insignificant in comparison to emissions from vehicle running at normal load.

With vehicle running at maximum rated power, the CO concentration in exhaust gas emission is 413 ppm before addition of FCC and with addition of FCC, the CO emission is significantly reduced by 39% to 252 ppm.

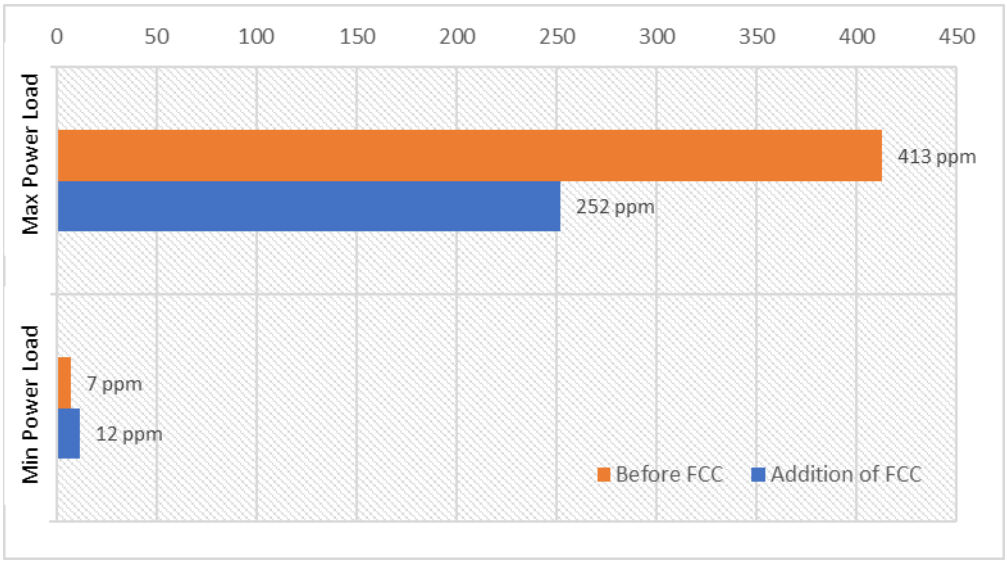
The emissions of CO before and after addition of FCC into the fuel is summarised in Table 4.1 below:

Table 4.1: Emissions of CO from Mitsubishi Trition's Exhaust Gas

Vehicle Operation Mode	Speed (RPM)	Before addition of FCC		After addition of FCC	
		Temp. (°C)	CO (ppm)	Temp. (°C)	CO (ppm)
Minimum Rated Power (idle)	650	75	7	55	12
Maximum Rated Power (high idle)	2,500	78	413	75	252

The results are depicted in Figure 4.1 below:

Figure 4.1: Emissions of CO from Mitsubishi Trition's Exhaust Gas Plot



4.2 NITROGEN OXIDE

4.2.1 DEFINITION

Nitrogen oxides (NOx), the term used to describe the sum of NO, nitrogen dioxide (NO_2), and other oxides of nitrogen (NOx = NO + NO_2).

These gaseous pollutants are produced under very high pressure and temperature conditions in an engine when nitrogen and oxygen in the air combines to form nitrous oxide, nitrogen dioxide and nitrogen oxide. NO makes up the largest content of NOx.

4.2.2 ANALYSIS

Based on the emissions test report (Att. 1), Mitsubishi Trition running at minimum rated power (idle) produces NOx in the exhaust at a concentration of 130 ppm before addition of FCC. With addition of FCC, the NOx emissions are significantly reduced by 79% from 130 ppm to 27 ppm. As NOx increases with excess oxygen, which occurs under lean fuel conditions and higher combustion temperatures, addition of FCC which appeared to have lowered the exhaust temperature from 75°C to 55°C would assisted in reduction of NOx emission.

With vehicle running at maximum rated power, the NOx concentration in exhaust gas emission is 151 ppm before addition of FCC and with addition of FCC, the emissions are reduced by 10% to 136 ppm.

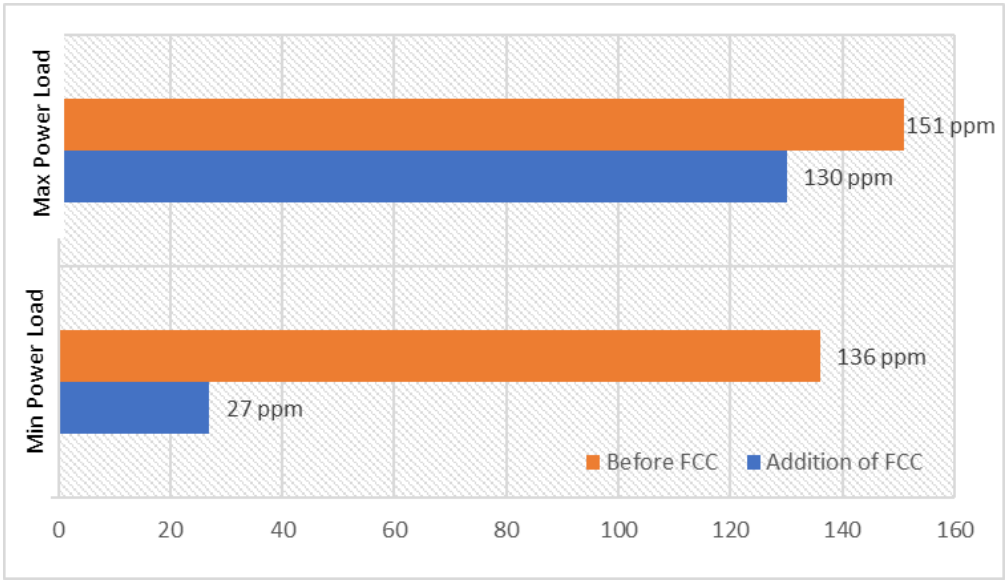
The emissions of NOx before and after addition of FCC into the fuel is summarised in Table 4.2 below:

Table 4.2: Emissions of NOx from Mitsubishi Trition's Exhaust

Vehicle Operation Mode	Speed (RPM)	Before addition of FCC		After addition of FCC	
		Temp. (°C)	NOx (ppm)	Temp. (°C)	NOx (ppm)
Minimum Rated Power (idle)	650	75	130	55	27
Maximum Rated Power (high idle)	2,500	78	151	75	136

Emissions of NOx is ranked No. 1 in the National Pollution Inventory Risk Ranking with the highest environmental hazard factor (Ref. 7). Hence, reduction in emissions of NOx is a highly beneficial for the environment. The results are depicted in Figure 4.2 below:

Figure 4.2: Emissions of NOx from Mitsubishi Trition's Exhaust Gas Plot



5 SUMMARY

Pollutant		Description	Impact / Adverse Effects	Maximum (ambient) concentration	Emissions before FCC (ppm)	Emissions after FCC (ppm)	Remarks / Conclusion
CO	Carbon Monoxide	Carbon monoxide (CO) is generated from combustion process as a component of motor vehicle exhaust. This gaseous pollutant is produced when there is insufficient oxygen present in the combustion chamber which results in a partially oxidised fuel.	CO's toxicity stems from its ability to reduce the oxygen-carrying capacity of blood by preferentially bonding to haemoglobin and impacts human health.	1,500 ppm (Att. 1) / 9.0 ppm per 8 hours (average period) (Att. 2)	Min: 7 Max: 413	Min: 12 Max: 252	A substantial 30% reduction of CO emissions at maximum rated power.
NOx	Nitrogen Oxide	Nitrogen oxides (NOx), the term used to describe the sum of NO, nitrogen dioxide (NO_2), and other oxides of nitrogen. NOx is the sum of NO and NO_2 contents in exhaust gas (NOx = NO + NO_2).	While NO is non-toxic by itself, it contributes to ozone formation. "NO2 can irritate the lungs and lower resistance to respiratory infection…" (Ref. 6). Under some conditions, NOx is also an important precursor to particulate matter (Ref. 2), haze and acid rain.	1,000 ppm (Att. 1) / 0.12 ppm per hour (average period) / 0.03 per year (average period) (Att. 2)	Min: 130 Max: 151	Min: 27 Max: 136	A notable significant 79% reduction of NOx emissions at minimum rated power and a 10% reduction of NOx emissions at maximum rated power.
NO	Nitric Oxide	NO makes up the largest content in exhaust gas (Ref. 4).			Min: 123 Max: 147	Min: 27 Max: 135	
NO_2	Nitrogen Dioxide	NO_2 in proportion 5-10% of NO (Ref. 4).			Min: 7 Max: 4	Min: 0 Max: 1	

Rapallo
consulting & contracting engineers

www.rapallo.com.au ABN: 31 726 506 590 ACN: 009 257 836

CERTIFICATE OF EXHAUST GAS ANALYSIS

SERIAL No. MMAJYKL10GH013995

MINING COMPANY: N/A (emissions test before fuel additive) *TEST DATE: 20/12/2016*
UNIT OWNER: SIAM Group *EXPIRY DATE: 20/12/2017*

SITE CONTRACTOR OPERATING UNIT: N/A (emissions test before fuel additive)
NAME OF MINE/DECLINE: N/A (emissions test before fuel additive)
CONTACT PERSON: Stuart Martin (ADDFUEL)
PHONE: 0488 678 046 *FAX: TBA*

UNIT MAKE: Mitsubishi *REGO No.: 1GCO 174*
MODEL No: Triton *ASSET No.: N/A*
ENGINE MAKE: Mitsubishi *ENGINE No.: MMAJYKL10GH013995*
ENGINE CAPACITY: 2400cc *ENGINE kW: 133*
TOTAL HOURS/KM RUN: 9,836 kms *ORIGINAL ENGINE: Yes*

EXHAUST TREATMENT TYPE: Standard Turbo Diesel *BANK: Straight 4 Cylinder*

ANALYSIS RESULTS

UNDILUTED EXHAUST GAS – Maximum level of exhaust gases permitted ; 1000ppm NOx 1500 ppm CO

ALTITUDE m	Rpm	TEMP °C	O2%	CO2%	Effg%	Effn%	CO ppm	NOx ppm	NO ppm	NO^2 ppm
Min Rated Power (idle)	650	75					7	130	123	7
Max Rated Power No Load (High idle)	2500	78					413	151	147	4
Max Rated Power Load Condition										

OPACITY TEST DATA

Opacity Meter calibrated before use (yes/no)? - N/A
Average peak opacity registered at snap idle - N/A % Maximum Opacity 50%
Average base opacity at idle - N/A %
Speed of engine during snap idle test, if available? - N/A rpm
Was opacity reading & procedure used representative? - N/A
Location of test, Surface or Underground? - Surface

EVALUATOR's NAME: S. Niederberger ***SIGNATURE:***

COMMENTS: Results Acceptable ***DATE: 20/12/2016***

Notes: Effn% = overall efficiency of combustion system Effg% = efficiency of gases existing the exhaust related by ratios of CO2 to CO and O2 in the exhaust gases.

KALGOORLIE
Phone: (08) 9021 8399 Fax: (08) 9021 6901
10 Broadwood Street, West Kalgoorlie
Western Australia 6430
PO Box 1123, Kalgoorlie WA 6433

PERTH
Phone: (08) 6279 0900 Fax: (08) 6279 0950
10 Elmsfield Road, Midvale
Western Australia 6056

Rapallo
consulting & contracting engineers

www.rapallo.com.au ABN: 31 726 506 590 ACN: 009 257 836

CERTIFICATE OF EXHAUST GAS ANALYSIS

SERIAL No. MMAJYKL10GH013995

MINING COMPANY: N/A (emissions test after fuel additive) *TEST DATE: 13/01/2017*
UNIT OWNER: SIAM Group *EXPIRY DATE: 13/01/2018*

SITE CONTRACTOR OPERATING UNIT: N/A (emissions test after fuel additive)
NAME OF MINE/DECLINE: N/A (emissions test after fuel additive)
CONTACT PERSON: Stuart Martin (ADDFUEL)
PHONE: 0488 678 046 *FAX: TBA*

UNIT MAKE: Mitsubishi *REGO No.: 1GCO 174*
MODEL No: Triton *ASSET No.: N/A*
ENGINE MAKE: Mitsubishi *ENGINE No.: MMAJYKL10GH013995*
ENGINE CAPACITY: 2400cc *ENGINE kW: 133*
TOTAL HOURS/KM RUN: 11,848 kms *ORIGINAL ENGINE: Yes*

EXHAUST TREATMENT TYPE: Standard Turbo Diesel *BANK: Straight 4 Cylinder*

ANALYSIS RESULTS

UNDILUTED EXHAUST GAS – Maximum level of exhaust gases permitted ; 1000ppm NOx 1500 ppm CO

ALTITUDE m	Rpm	TEMP °C	O2%	CO2%	Effg%	Effn%	CO ppm	NOx ppm	NO ppm	NO^2 ppm
Min Rated Power (idle)	650	55					12	27	27	0
Max Rated Power No Load (High idle)	2500	75					252	136	135	1
Max Rated Power Load Condition										

OPACITY TEST DATA

Opacity Meter calibrated before use (yes/no)? - *N/A*
Average peak opacity registered at snap idle - *N/A* *% Maximum Opacity 50%*
Average base opacity at idle - *N/A* *%*
Speed of engine during snap idle test, if available? - *N/A* *rpm*
Was opacity reading & procedure used representative? - *N/A*
Location of test, Surface or Underground? - *Surface*

EVALUATOR's NAME: S. Niederberger ***SIGNATURE:***

COMMENTS: Results Acceptable ***DATE: 13/01/2017***

Notes: Effn% = overall efficiency of combustion system Effg% = efficiency of gases existing the exhaust related by ratios of CO2 to CO and O2 in the exhaust gases.

KALGOORLIE
Phone: (08) 9021 8399 Fax: (08) 9021 6901
10 Broadwood Street, West Kalgoorlie
Western Australia 6430
PO Box 1123, Kalgoorlie WA 6433

PERTH
Phone: (08) 6279 0900 Fax: (08) 6279 0950
10 Elmsfield Road, Midvale
Western Australia 6056

Australian Government
Department of the Environment and Energy

Air quality standards

On this page

Ambient air quality standards

On 26 June 1998, the National Environment Protection Council (NEPC) made Australia's first national ambient air quality standards as part of the National Environment Protection Measure for Ambient Air Quality (the 'Air NEPM').

The NEPC is a statutory body with law making powers established under the National Environment Protection Council Act 1994 (Commonwealth) and corresponding legislation in the other jurisdictions. The members of NEPC are Ministers, not necessarily environment Ministers, representing the participating jurisdictions (i.e. Commonwealth, State or Territory Governments).

The Air NEPM sets national standards for the six key air pollutants to which most Australians are exposed: carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide, lead and particles. Under the Air NEPM, all Australians have the same level of air quality protection.

The standards, which are set out below, are legally binding on each level of Government, and must be met by the year 2008. The Air NEPM requires the jurisdictions to monitor air quality and this helps to identify potential air quality problems. All jurisdictions commenced formal reporting against the Air NEPM standards in 2002.

Pollutant	Averaging period	Maximum (ambient) concentration	Goal within 10 years (maximum allowable exceedences)
Carbon monoxide	8 hours	9.0 ppm	1 day a year
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	none
Photochemical oxidants (as ozone)	1 hour	0.10 ppm	1 day a year
	4 hours	0.08 ppm	1 day a year
Sulfur dioxide	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	1 year	0.02 ppm	none
Lead	1 year	0.50 $\mu g/m^3$	none
Particles as PM_{10}	1 day	50 $\mu g/m^3$	5 days a year

The $PM_{2.5}$ Variation to the Air NEPM sets the following advisory reporting standards and goal for particles as $PM_{2.5}$.

Pollutant	Averaging period	Maximum (ambient) concentration	Goal
Particles as PM2.5	1 day 1 year	25 $\mu g/m^3$ 8 $\mu g/m^3$	Goal is to gather sufficient data nationally to facilitate a review of the standard as part of the review of this Measure scheduled to commence in 2005.

For more information on the Air NEPM, see our factsheet on National Standards for Criteria Air Pollutants in Australia.

The full documentation of the Air NEPM and more information about the NEPC are available at www.scew.gov.au .

Emission standards

Australia does not have national air quality emissions standards. Environment protection authorities in individual States and Territories set such standards.

You may wish to contact the local State or Territory environment agency for details on the current emission controls/licence conditions imposed on facilities in their jurisdiction.

In addition, the publication 'Air Quality Regulations and Odour Management in Australia and New Zealand' provides a summary of the standards and air pollution legislation existing in Australia. This publication can be purchased from the Clean Air Society of Australia and New Zealand at their website located at www.casanz.org.au .

Air toxics

In December 2004, the National Environment Council (NEPC) made the National Environment Protection (Air Toxics) Measure (known as the 'Air Toxics NEPM') which establishes 'monitoring investigation levels' for 5 air toxics - benzene; formaldehyde; benzo(a)pyrene as a marker for Polycyclic Aromatic Hydrocarbons; toluene; and xylenes. Monitoring data gathered under the Air Toxics NEPM will inform future decisions on the management of these pollutants.

More about the Air Toxics NEPM