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#### REPORT ON FUEL EFFICIENCY TRIAL CATERPILLAR 777C TRUCKS BORAL CONTRACTING COOLJARLOO OPERATIONS

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### EXECUTIVE SUMMARY

This report outlines the fuel efficiency gains and economic benefits provided by use of Fuel Technology's FTC Combustion Catalyst in a trial comprising three Caterpillar 777C model haul trucks operating at Boral Contractors Cooljarloo operations.

Fuel efficiency gains measured ranged from a low of 7.9% to a high of 11.7% averaging **9.5%** efficiency gain.

The trial procedure enables fuel consumption measurements to be made with the truck operating under normal mine operating conditions, monitoring haul times, fuel consumed, fuel temperatures, distance traversed and payload carried.

The results of this multi haul-truck trial are reported in detail on the following pages. They confirm that:-

- 1. The trial data has uniformity and reproducibility providing confidence in the measuring technique and test protocol.
- 2. The measured difference in fuel consumption between untreated diesel baseline tests and subsequent FTC treated tests show an average 9.5% reduction in fuel consumption.

The fuel consumption reductions monitored are in line with our database of tests conducted over the past fifteen years.

### INTRODUCTION

This fuel efficiency study at Cooljarloo was initiated by Boral Contracting senior staff. Three available trucks were selected for testing in order to provide a more representative and accurate assessment of the fuel efficiency potential that may be provided by the FTC catalyst.

Caterpillar 777C units numbered RD100, RD102 and RD103 were selected for the trial. Baseline tests were conducted on 11<sup>th</sup> and 12<sup>th</sup> May 1998 and following a period of FTC fuel treatment, treated tests on the 22<sup>nd</sup> May, 1998.

Preceding treated tests mining was shut down for twelve (12) hours due to wet weather. RD 102 was the first truck tested following this shut down and appears to have taken several loads to reach operating temperature and true efficiency.

### TEST PROCEDURE

The test procedure requires measurement of the mass of fuel consumed related to the work done in hauling a measured load of ore over a defined reproducible distance.

A start point at a given distance from the working bench is marked by a surveyor's peg and a finish point prior to dump area marked with sighting pegs. The distance between the start and finish point of the haul cycle is measured. The distance of the haul route at Cooljarloo was 720 meters.

MacNaught Model M5 flow transducers, complete with thermocouple probes, are connected to the truck's fuel tank outlet and return fuel pipelines (*Photograph No 1*). These transducers, which have been calibrated to  $\pm$  0.25% by a NATA Certified Laboratory, are then connected to a KEP Minitrol totaliser mounted in the truck cab. The thermocouple probes are connected to a duel reading digital thermometer also mounted in the cab workstation (*Photograph No 2*).

As the temperature of the fuel can vary relative to ambient temperature changes as well as increase significantly during a working shift, constant temperature monitoring is required to enable calculation of the mass of fuel consumed each haul.

Prior to the test commencing a fuel sample is drawn and the density measured at observed temperature and then corrected to the industry standard of 15°C by use of the Institute of Petroleum Density Correction Table, Volume VIII, Table 53B.

Following loading of the truck at each cycle, allowing the load monitor to register, the load in kilograms is recorded and the truck driven to the bottom marker and stopped. The Minitrol totaliser and stopwatch are zeroed. At the signal "GO" the driver accelerates and the test engineer activates the totaliser and stopwatch.

To avoid driver variables the truck is driven at full throttle over the haul test circuit. Fuel temperatures are recorded at the mid haul point and upon arrival at the haul finish marker the stopwatch and Minitrol totaliser readings recorded. Approximately sixteen test runs were recorded for each of the three test trucks.



Photo 1. McNaught transducers fitted to fuel tank measuring flow to and return from engine.



# Data recording equipment set up in drivers cab. Minitrol volume recorder, digital thermometer, Stop watch and data work sheets.

### TEST RESULTS

The individual results achieved by each of the three test trucks are shown in Table I below. The results are reported as fuel consumed in kilograms/tonne (kg/t) which relates to a more accurate mass measurement compared to the usual mine operations method of recording litres/hour (L/h). However, to fully assess fuel consumed for a given amount of work done the formula:-

#### Distance travelled x load carried Fuel consumed

should be employed, thus reporting efficiency as tonne kilometers/kilogram (t km/kg). (Koehler & Doglio, 1987)

#### TABLE 1

Unit No.	<b>Truck Model</b>	Fuel Consumption Reduction	<b>Fuel Efficiency Gains</b>
		kg/t	t km/kg
RD100	777C	- 8.3%	+ 9.0%
RD102	777C	- 10.6%	+ 11.7%
RD103	777C	- 7.4%	+7.9%

#### Average Fuel Consumption Reductions

Details of all data extracted during the trial program for each truck are shown in the following computer printouts. The arithmetic mean has been calculated together with the Standard Deviation and Co-efficient of Variation (C.V.)

SPECIF	C FUEL C	ONSUMP	TION	TRU	CK TRIAL												-
Custome	er:	BORAL C	COOL	JARL	00	Engine H	rs		9639				Fuel Sam	nple	Density	Temp Deg C	]
Date:		11/05/98				Amb; Ter	np; High c	leg; C	20.7				-		0.822	36.2	
Truck No	;	RD100				Amb; Ter	np; Low d	eg; C	19.6				Corrected	d	0.837	15	
Make/Mo	del	Cat 777C				Circuit Di	stance		720m								
Truck W	eight	64 Tonne															
	Time	Load	Haul	Time	Haul Time	Fuel	(1 +)	Fuel (Lt)	Euol '	Tomp	Dor	eitv	Fuel	(kg)	Eucl (kg)	Fuel (kg)	Toppo km
Nullino	TIME	Tonne	Mine	Sace	Mine	In			In		In		In	(kg) Out	Consumed	Per Tonne	Per ka Fuel
1	11.00	83	1	32	1 53	19 55	15.68	3.87	27.1	35.1	0.828	0.823	16 20	12 90	3 29	0.0224	32 1339
2	11.10	82	1	32	1.53	19.58	15.70	3.88	27.2	35.4	0.828	0.823	16.22	12.91	3.31	0.0226	31,8039
3	11.20	83	1	32	1.53	19.67	15.76	3.91	29.4	36.7	0.827	0.822	16.26	12.95	3.31	0.0225	31,9301
4	11.30	93	1	32	1.53	19.64	15.73	3.91	31.2	37.3	0.826	0.821	16.21	12.92	3.30	0.0210	34.3029
5	11.40	86	1	32	1.53	19.67	15.78	3.89	32.3	38.1	0.825	0.821	16.22	12.95	3.27	0.0218	32.9955
6	11.50	73	1	30	1.50	19.42	15.56	3.86	34.1	39.2	0.824	0.820	15.99	12.76	3.23	0.0236	30.4941
7	12.00	93	1	32	1.53	19.54	15.65	3.89	34.6	39.4	0.823	0.820	16.08	12.83	3.26	0.0207	34.7274
8	12.10	89	1	31	1.52	19.48	15.59	3.89	36.0	40.3	0.822	0.819	16.01	12.77	3.24	0.0212	33.9503
9	12.20	89	1	31	1.52	19.57	15.61	3.96	37.1	40.3	0.821	0.819	16.07	12.79	3.29	0.0215	33.4971
10	12.30	87	1	31	1.52	19.46	15.57	3.89	38.0	42.7	0.821	0.817	15.97	12.73	3.24	0.0215	33.5152
11	12.40	73	1	26	1.43	18.58	14.72	3.86	38.8	41.7	0.820	0.818	15.24	12.04	3.20	0.0233	30.8550
12	12.50	71	1	28	1.47	18.77	15.06	3.71	39.9	42.7	0.819	0.817	15.38	12.31	3.07	0.0227	31.6603
13	1.15	88	1	31	1.52	19.54	15.59	3.95	39.8	40.0	0.820	0.819	16.01	12.77	3.24	0.0213	33.7763
14	1.25	85	1	31	1.52	19.42	15.54	3.88	40.8	43.8	0.819	0.817	15.90	12.69	3.21	0.0215	33.4290
15	1.35	/5	1	28	1.47	18.78	15.09	3.69	41.3	44.6	0.818	0.816	15.37	12.31	3.05	0.0220	32.7637
16	1.45	81	1	28	1.47	18.70	15.01	3.69	42.8	45.5	0.817	0.815	15.28	12.24	3.04	0.0210	34.2930
Mean		83			1 51			3.86							3 223	0.0219	32,883
Std Dev		7 01635			0.0316			0.0848							0.0891	0.0213	1 2752
C V		8.4%			2 1%			2.2%							2.8%	3.9%	3.9%
SPECIF		ONSUMP	TION	TRU	CK TRIAL	Engine H	rs		9813			l	Fuel San	nle	Density	Temp Deg C	1
SPECIF Truck No Date:	C FUEL C	ONSUMP RD100 22/04/98	TION	TRU	CK TRIAL	Engine H Amb; Ter	rs np; High c	leg; C	9813 16.3				Fuel San	nple	Density 0.825	Temp Deg C 35.4	]
SPECIF Truck No Date:	C FUEL C	ONSUMP RD100 22/04/98	TION	TRU	CK TRIAL	Engine H Amb; Ter Amb; Ter	rs np; High c np; Low d	leg; C eg; C	9813 16.3 23.1				Fuel San Corrected	nple d	Density 0.825 0.839	Temp Deg C 35.4 15	]
SPECIF Truck No Date:	C FUEL C	ONSUMP RD100 22/04/98	TION	TRU	CK TRIAL	Engine H Amb; Ter Amb; Ter	rs np; High c np; Low d	leg; C eg; C	9813 16.3 23.1				Fuel San Corrected	nple d	Density 0.825 0.839	Temp Deg C 35.4 15	]
SPECIF Truck No Date: TREATE	C FUEL C	ONSUMP RD100 22/04/98	TION	TRU	CK TRIAL	Engine H Amb; Ter Amb; Ter	rs np; High c np; Low d	leg; C eg; C Fuel (I t)	9813 16.3 23.1	Temp	Der	nsity	Fuel San Corrected	nple d	Density 0.825 0.839	Temp Deg C 35.4 15 Fuel (kg)	Tonne km
SPECIF Truck No Date: TREATE Run No	C FUEL C	CONSUMP RD100 22/04/98 Load Tonne	TION Haul Mins	TRU	CK TRIAL Haul Time Mins	Engine H Amb; Ter Amb; Ter Fuel In	rs np; High c np; Low d (Lt) Out	leg; C eg; C Fuel (Lt) Consumed	9813 16.3 23.1 Fuel	Temp	Der	nsity Out	Fuel San Corrected Fuel	nple d (kg) Out	Density 0.825 0.839 Fuel (kg) Consumed	Temp Deg C 35.4 15 Fuel (kg) Per Tonne	Tonne km Per ka Fuel
SPECIF Truck No Date: TREATE Run No	C FUEL C	RD100 22/04/98 Load Tonne 104	Haul Mins	Time Secs	Haul Time Mins 1.53	Engine H Amb; Ter Amb; Ter Fuel In 19.36	rs np; High c np; Low d (Lt) Out 15.58	leg; C eg; C Fuel (Lt) Consumed 3.78	9813 16.3 23.1 Fuel In 29.6	Temp Ou 38.0	Der In 0.829	nsity Out 0.823	Fuel San Corrected Fuel In 16.05	nple d (kg) Out 12.82	Density 0.825 0.839 Fuel (kg) Consumed 3.23	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192	Tonne km Per kg Fuel 37.4782
SPECIF Truck No Date: TREATE Run No	C FUEL C	RD100 22/04/98 Load Tonne 104 96	Haul Mins	Time Sect 32 29	Haul Time Mins 1.53 1.48	Engine H Amb; Ter Amb; Ter Fuel In 19.36 18.84	rs np; High c np; Low d (Lt) Out 15.58 15.12	leg; C eg; C Fuel (Lt) Consumed 3.78 3.72	9813 16.3 23.1 Fuel In 29.6 30.2	Temp Ou 38.0 41.4	Der In 0.829 0.829	out 0.823 0.821	Fuel San Corrected Fuel In 16.05 15.61	hple d (kg) Out 12.82 12.41	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200	Tonne km Per kg Fuel 37.4782 35.9676
SPECIF Truck No Date: TREATE Run No	C FUEL C : D Time 10.30 10.40 10.47	CONSUMP RD100 22/04/98 Load Tonne 104 96 100	Haul Mins 1 1	Time Secs 32 29 30	Haul Time Mins 1.53 1.48 1.50	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05	rs np; High c np; Low d (Lt) Out 15.58 15.12 15.22	leg; C eg; C Consumed 3.78 3.72 3.83	9813 16.3 23.1 Fuel In 29.6 30.2 31.3	Temp Ou 38.0 41.4 42.8	Der In 0.829 0.829 0.828	out 0.823 0.821 0.820	Fuel San Corrected In 16.05 15.61 15.77	hple d (kg) Out 12.82 12.41 12.47	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201	Tonne km Per kg Fuel 37.4782 35.9676 35.8204
SPECIF Truck No Date: TREATE Run No	C FUEL C Time 10.30 10.40 10.47 10.55	CONSUMP RD100 22/04/98 Load Tonne 104 96 100 92	Haul Mins 1 1 1	Time Secs 32 29 30 27	Haul Time Mins 1.53 1.48 1.50 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85	rs np; High c np; Low d (Lt) Out 15.58 15.12 15.22 15.11	leg; C eg; C Consumed 3.78 3.72 3.83 3.74	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6	Temp Ou 38.0 41.4 42.8 43.5	Den In 0.829 0.829 0.828 0.828	sity Out 0.823 0.821 0.820 0.819	Fuel San Corrected In 16.05 15.61 15.77 15.60	hple d (kg) Out 12.82 12.41 12.47 12.38	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0207	Tonne km Per kg Fuel 35.9676 35.8204 34.8382
SPECIF Truck No Date: TREATE Run No	C FUEL C Time 10.30 10.40 10.47 10.55 11.03	CONSUMP RD100 22/04/98 Load Tonne 104 96 100 92 99	Haul Mins 1 1 1 1	TRU Secs 32 29 30 27 29	Haul Time Mins 1.53 1.48 1.50 1.45 1.48	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.87	rs np; High c np; Low d (Lt) 0ut 15.58 15.12 15.22 15.21 15.09	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.78	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0	Temp Ou 38.0 41.4 42.8 43.5 45.2	Der In 0.829 0.829 0.828 0.828 0.828	sity 0.823 0.821 0.820 0.819 0.818	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.60	hple d (kg) 0ut 12.82 12.41 12.47 12.38 12.34	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.30 3.22 3.25	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0207 0.0200	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696
SPECIF Truck No Date: TREATE Run No	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12	ONSUMP RD100 22/04/98 Load Tonne 104 966 100 92 99 93	Haul Mins 1 1 1 1 1	TRU Secs 32 29 30 27 29 29 26	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.85 18.87 18.52	rs np; High c np; Low d (Lt) <u>Out</u> 15.58 15.12 15.22 15.11 15.09 14.86	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.74 3.78 3.67	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0 33.7	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1	Der In 0.829 0.829 0.828 0.828 0.828 0.827 0.826	sity 0.823 0.821 0.820 0.819 0.818 0.817	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.30	(kg) Out 12.82 12.41 12.47 12.38 12.34 12.14	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0200 0.0201 0.0207 0.0200 0.0201	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674
SPECIF Truck No Date: TREATE Run No	C FUEL C	CONSUMP       RD100     22/04/98       Load     Tonne       104     96       100     92       99     93       98     67	Haul Mins 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 26	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.43	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.87 18.52 18.52	rs np; High c np; Low d (Lt) 0ut 15.58 15.12 15.22 15.11 15.09 14.86 15.00	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.78 3.74 3.78 3.67 3.77	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0 33.7 34.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2	Der In 0.829 0.828 0.828 0.828 0.827 0.826 0.826	sity 0.823 0.821 0.820 0.819 0.818 0.817 0.817	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.30 15.30	(kg) Out 12.82 12.41 12.47 12.38 12.34 12.14 12.14 12.14	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 00	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827
SPECIF Truck No Date: TREATE Run No 1 2 3 4 4 5 6 6 7 7 7 8	C FUEL C	Load       Tonne       104       96       100       99       93       98       89	Haul Mins 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 28 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.43 1.43 1.43 1.47 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.87 18.52 18.77 18.52	rs np; High c np; Low d (Lt) 0ut 15.58 15.12 15.22 15.21 15.29 14.86 15.00 14.94	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.74 3.76 3.67 3.67 3.67	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.3 34.3 34.3	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.1 46.2 46.3	Der In 0.829 0.828 0.828 0.828 0.828 0.826 0.826 0.826 0.826	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.30 15.30 15.50	(kg) Out 12.82 12.41 12.47 12.38 12.34 12.34 12.14 12.26 12.20	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.24	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0200 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 00	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 25.9227
SPECIF Truck No Date: Run No 1 2 2 3 4 4 5 6 6 6 6 7 7 8 8 9 9	C FUEL C	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Load     Tonne       104     96       100     92       99     93       98     89       92     02	Haul Mins 1 1 1 1 1 1 1 1 1	TRU Sec: 32 29 30 27 29 26 28 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.47 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.87 18.52 18.77 18.62 18.62 18.62	(Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.99	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.74 3.67 3.67 3.68 3.65 3.77	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.9 36.9 36.7	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0	Den In 0.829 0.828 0.828 0.828 0.826 0.826 0.826 0.825 0.825	sity 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.817 0.817	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.36 15.37 15.40	nple d (kg) Out 12.41 12.47 12.38 12.14 12.14 12.14 12.26 12.20 12.24 12.24	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.24	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0200 0.0201 0.0200 00	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.8806 35.8292
<b>SPECIF</b> Truck No Date: <b>TREATE</b> Run No 1 2 3 4 4 5 6 7 7 8 9 10 11 12 12 12 12 12 12 12 12 12	C FUEL C	Load       Tonne       104       96       100       92       93       98       89       92       93       98       89       92       93       93       93       93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.47 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.85 18.85 18.87 18.52 18.77 18.62 18.64 18.64 18.69 18.71	(Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.98	leg; C eg; C Fuel (Lt) Consumed 3.78 3.72 3.83 3.74 3.74 3.68 3.67 3.77 3.68 3.65 3.70 3.60 3.70 3.60	9813 16.3 23.1 Fuel 1n 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.0 36.0 37.4	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.0 48.0	Der In 0.829 0.828 0.828 0.828 0.826 0.826 0.826 0.825 0.825 0.824 0.824	sity Out 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.817 0.816	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.30 15.30 15.30 15.36 15.37 15.40	nple d (kg) Out 12.41 12.47 12.38 12.34 12.26 12.20 12.24 12.20 12.24 12.23	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.30 3.22 3.16 3.24 3.13 3.17 3.17	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6330 35.8304
SPECIF Truck No Date: TREATE Run No 1 2 3 3 4 4 5 6 6 7 7 7 8 8 9 9 10 11	C FUEL C D Time 10.30 10.40 10.40 10.47 10.55 11.03 11.12 11.20 11.38 11.47 11.55 12.03	ONSUMP RD100 22/04/98 22/04/98 100 99 93 98 89 92 93 93 93 93 93 93 93 93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 27 27 27 27 27 27 27 28 28 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.47 1.45 1.45 1.45 1.45 1.47 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.87 18.52 18.71 18.62 18.64 18.69 18.71 18.69	rs np; High c np; Low d (Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.98 15.02 14.98	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.65 3.65 3.70 3.68 3.65 3.70 3.69 3.73	9813 16.3 23.1 Fuel 1n 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.7 37.4 38.0	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.0 48.4	Der In 0.829 0.828 0.828 0.828 0.826 0.826 0.826 0.825 0.825 0.824 0.824 0.824	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.816 0.816 0.816	Fuel San Corrected In 16.05 15.61 15.60 15.30 15.50 15.36 15.37 15.40 15.41 15.31	nple d (kg) Out 12.82 12.41 12.47 12.38 12.34 12.14 12.20 12.24 12.20 12.24 12.23 12.26	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 4.3.16 3.13 3.17 3.15 3.18	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0202 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6330 35.6330 35.8394 35.5234
SPECIF Truck No Date: TREATH Run No 2 2 3 3 4 4 5 6 6 6 7 7 8 8 9 9 10 11 12 13	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.38 11.47 11.55 12.03	ONSUMP RD100 22/04/98 22/04/98 Load Tonne 104 96 100 92 99 93 98 89 92 93 93 93 93 93 93 93 93 93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.47 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.87 18.52 18.77 18.62 18.69 18.69 18.71 18.62 18.71 18.62	rs np; High c np; Low d (Lt) 0ut 15.58 15.12 15.22 15.21 15.22 15.21 15.00 14.94 14.99 14.98 15.02 14.89 14.89	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.78 3.67 3.67 3.68 3.65 3.70 3.69 3.73 3.69 3.73 3.69 3.73 3.69 3.73 3.69 3.73 3.69	9813 16.3 23.1 Fuel 1n 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.7 37.4 38.6	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.0 48.1 48.9	Der In 0.829 0.828 0.828 0.826 0.825 0.825 0.825 0.825 0.824 0.824 0.823 0.823	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.816 0.816 0.816 0.816	Fuel San Corrected In 16.05 15.61 15.70 15.60 15.30 15.50 15.37 15.40 15.41 15.33 15.24	(kg) Out 12.82 12.41 12.41 12.44 12.38 12.34 12.14 12.20 12.24 12.23 12.26 12.14 12.09	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.14 3.16 3.13 3.17 3.15 3.18 3.14	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0202 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6300 35.6330 35.6334 35.5234
SPECIF Truck No Date: TREATE Run No 1 2 3 4 5 6 6 7 7 8 9 10 11 12 13 14 14	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.31 11.47 11.55 12.03 12.10 12.11	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Tonne     104       106     100       92     93       98     89       92     93       93     93       93     93       93     93       93     93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter In 19.6 19.84 19.05 18.85 18.87 18.87 18.87 18.87 18.62 18.77 18.62 18.71 18.62 18.71 18.62 18.71 18.62 18.52 18.52	rs np; High c np; Low d (Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.88 15.02 14.89 14.83	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.78 3.67 3.67 3.69 3.69 3.70 3.69 3.73 3.69 3.73	9813 16.3 23.1 Fuel 1n 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.7 37.4 38.0 38.0 38.0 38.0 39.1	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 46.2 46.8 47.4 48.9 48.1 48.4 48.9 49.4	Den In 0.829 0.828 0.828 0.826 0.826 0.826 0.825 0.825 0.824 0.824 0.824 0.823 0.823 0.823	sity 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.50 15.30 15.30 15.37 15.33 15.24 15.33	nple d (kg) Out 12.41 12.47 12.38 12.34 12.14 12.26 12.20 12.24 12.23 12.26 12.14 12.29 12.16	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.13 3.17 3.15 3.18 3.14 3.14	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0203 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.6330 35.8394 35.5234 35.5234 35.9449
SPECIF Truck No Date: TREATE Run No 12 23 4 4 5 6 6 6 7 7 8 8 9 10 11 12 13 14 15	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.31 11.47 11.55 12.03 12.10 12.18 12.35	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Tonne     104       96     100       92     99       93     98       89     92       933     933       933     933       933     933       933     933	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secc 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.85 18.87 18.87 18.62 18.77 18.62 18.77 18.62 18.71 18.62 18.71 18.62 18.71 18.62 18.51 18.52	(Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 15.02 14.89 14.83 14.92 14.89	leg; C eg; C Fuel (Lt) Consumed 3.78 3.72 3.83 3.74 3.78 3.67 3.67 3.67 3.69 3.69 3.69 3.69 3.64	9813 16.3 23.1 Fuel In 29.6 30.2 31.3 31.6 33.0 33.7 34.9 36.0 36.7 37.4 38.0 38.7 38.0 38.7 39.1 39.1	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 48.4 48.9 49.4	Der In 0.829 0.828 0.828 0.827 0.826 0.825 0.824 0.823 0.823 0.823 0.823 0.822	sity 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.36 15.37 15.40 15.41 15.33 15.24 15.30 15.24	nple d 1 (kg) 0ut 12.41 12.47 12.38 12.34 12.14 12.26 12.20 12.24 12.23 12.26 12.14 12.23 12.26 12.14 12.09 12.16 12.19	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.13 3.17 3.15 3.18 3.14 3.14 3.14 3.10	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0203 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0200 0.0201 0.0200 0.0201 0.0200 0.0200 0.0201 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.6330 35.8394 35.6330 35.5234 35.5234 35.9443 35.9443 35.9443 35.9443 36.2662
SPECIF Truck No Date: TREATE Run No 1 2 3 3 4 4 5 6 7 7 7 8 8 9 10 11 12 13 14 15 16	C FUEL C Time Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.12 11.20 11.30 11.12 12.03 12.10 12.18 12.35 12.45	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Load     Tonne       104     96       100     92       999     93       988     89       923     93       933     933       933     933       933     933       933     933       932     89	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secc 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.87 18.52 18.77 18.62 18.64 18.69 18.71 18.62 18.71 18.62 18.71 18.62 18.71 18.62 18.71 18.52	(Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 15.02 14.83 14.83 14.83 14.83 14.83 14.83	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.74 3.77 3.68 3.65 3.70 3.69 3.69 3.69 3.69 3.64 3.64 3.65	9813 16.3 23.1 Fuel 1 1 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.7 36.0 36.7 37.4 38.0 38.6 38.6 39.1 1 99.4	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.826 0.826 0.826 0.825 0.825 0.824 0.824 0.823 0.823 0.823 0.822 0.822	sity Out 0.823 0.821 0.819 0.819 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.30 15.30 15.33 15.24 15.33 15.24 15.33 15.24 15.33 15.24	nple d (kg) Out 12.41 12.47 12.38 12.34 12.26 12.20 12.24 12.26 12.20 12.24 12.26 12.14 12.09 12.16 12.19 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.20 3.30 3.20 3.30 3.22 3.16 3.14 3.14 3.14 3.10 3.10 3.10 3.10	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0203 0.0201 0.0203 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0201 0.0200 0.0200 0.0201 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8304 35.8394 35.6330 35.8394 35.5234 35.9443 35.9443 35.9443 35.9443
SPECIF Truck No Date: TREATE Run No 1 2 3 4 4 5 6 7 7 8 9 10 11 12 13 14 15 16 	C FUEL C Time 10.30 10.40 10.40 10.47 10.55 11.03 11.12 11.20 11.38 11.47 11.55 12.03 12.10 12.18 12.35 12.45	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       100     22/04/98       100     96       100     92       99     93       98     89       993     93       933     933       933     933       933     933       93     93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Sec: 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.85 18.87 18.52 18.62 18.64 18.69 18.71 18.62 18.62 18.52 18.61 18.59 18.59	rs np; High c np; Low d 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 14.92 14.83 14.92 14.83	leg; C eg; C 5000000000000000000000000000000000000	9813 16.3 23.1 Fuel 1 1 9.6 30.2 31.3 31.6 33.0 34.3 34.3 34.9 36.0 38.6 39.1 38.6 39.1 39.4 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.828 0.826 0.826 0.825 0.825 0.825 0.824 0.823 0.823 0.823 0.823 0.822 0.822	sity Out 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815 0.815	Fuel San Corrected In 16.05 15.61 15.77 15.60 15.30 15.30 15.36 15.37 15.40 15.41 15.43 15.24 15.33 15.24 15.28 15.21	nple d (kg) Out 12.82 12.41 12.47 12.38 12.34 12.26 12.20 12.24 12.26 12.20 12.24 12.29 12.16 12.19 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.13 3.17 3.15 3.18 3.14 3.14 3.10 3.10	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0203 0.0203 0.0200 0.0203 0.0204 0.0203 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6330 35.8394 35.5234 35.9443 35.9443 35.9449 36.2662 36.2662
SPECIF Truck No Date: TREATH Run No 2 3 3 4 5 6 6 6 7 7 8 8 9 9 10 11 12 13 14 15 16 16 16 16 16 16 16 16 16 16 16 16 16	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.30 11.47 11.55 12.03 12.10 12.18 12.45 12.45	ONSUMP RD100 22/04/98 22/04/98 22/04/98 100 104 96 100 92 99 93 93 93 93 93 93 93 93 93	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secs 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.48 1.43 1.47 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 18.84 19.05 18.87 18.52 18.77 18.62 18.61 18.69 18.71 18.62 18.61 18.52 18.61	rs np; High c np; Low d (Lt) Out 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.98 15.02 14.83 14.92 14.83 14.92 14.85 14.87	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.78 3.67 3.68 3.65 3.70 3.69 3.69 3.69 3.69 3.69 3.69 3.69 3.69	9813 16.3 23.1 In 29.6 30.2 31.3 31.6 33.0 33.0 33.0 33.7 34.9 36.0 36.7 37.4 38.0 38.6 39.1 39.4 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.828 0.826 0.826 0.825 0.825 0.825 0.824 0.823 0.823 0.823 0.822 0.822 0.822	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815	Fuel San Corrected In 16.05 15.61 15.60 15.60 15.30 15.36 15.37 15.40 15.41 15.43 15.24 15.23 15.24	nple d (kg) Out 12.82 12.41 12.47 12.38 12.34 12.14 12.20 12.24 12.20 12.24 12.20 12.14 12.09 12.16 12.19 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.14 3.13 3.17 3.15 3.18 3.14 3.10 3.10 3.10	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0202 0.0201 0.0203 0.0200 0.0203 0.0203 0.0203 0.0203	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6300 35.6330 35.5234 35.9443 35.9443 35.9449 36.2662 35.5240
SPECIF Truck No Date: TREATE Run No 1 2 3 3 4 5 6 6 7 8 9 10 11 12 14 15 16 Mean Std Dev	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.30 11.32 11.55 12.03 12.14 12.14 12.35	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       100     96       100     92       999     933       988     89       92     933       933     933       933     933       933     933       933     932       939     94	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Sec: 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27 27	Haul Time       Mins       1.53       1.48       1.50       1.48       1.43       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45       1.45	Engine H Amb; Ter Amb; Ter In 19.36 18.84 19.05 18.85 18.85 18.87 18.52 18.77 18.62 18.77 18.62 18.71 18.62 18.71 18.62 18.71 18.62 18.52 18.52 18.52	rs np; High c np; Low d (Lt) <u>Out</u> 15.58 15.12 15.22 15.21 15.22 15.11 15.09 14.86 15.00 14.94 15.02 14.89 14.83 14.92 14.83 14.92 14.83	leg; C eg; C Consumed 3.78 3.72 3.83 3.74 3.74 3.78 3.65 3.67 3.67 3.69 3.69 3.69 3.69 3.69 3.64 3.65 	9813 16.3 23.1 Fuel 1 29.6 30.2 31.3 31.6 33.0 33.7 34.3 36.0 36.7 37.4 38.0 38.6 38.6 38.6 39.4 40.5	Temp Ou 38.00 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.4 48.0 48.1 48.4 48.9 48.4 48.9 49.4 49.9	Den In 0.829 0.828 0.828 0.826 0.826 0.826 0.825 0.825 0.824 0.823 0.823 0.822 0.822	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.816 0.816 0.815 0.815 0.815	Fuel San Corrected In 16.05 15.61 15.60 15.60 15.30 15.30 15.30 15.33 15.24 15.24 15.24 15.28 15.21	nple d (kg) Out 12.42 12.41 12.47 12.38 12.34 12.14 12.26 12.20 12.24 12.23 12.26 12.14 12.29 12.16 12.19	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.13 3.17 3.15 3.18 3.14 3.10 3.181 0.0560	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0207 0.0201 0.0202 0.0201 0.0203 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0200 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0202 0.0201 0.0207 0.0201 0.0207 0.0201 0.0207 0.0201 0.0207 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0200 0.0201 0.0202 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.6330 35.8306 35.6330 35.5234 35.9439 36.2662 35.5240 
SPECIF Truck No Date: Run No 1 2 3 3 4 4 5 6 6 6 7 7 8 8 9 9 100 111 121 13 144 15 16 10 10 10 10 10 10 10 10 10 10 10 10 10	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.12 11.20 11.30 11.15 12.03 12.10 12.118 12.45	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Tonne     104       106     100       92     99       93     98       89     92       933     93       933     93       933     93       933     93       933     93       94     4.06151       4.3%     2.5%	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Sec: 32 29 30 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27 27	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 19.36 18.84 19.05 18.85 18.87 18.87 18.87 18.62 18.77 18.62 18.71 18.62 18.71 18.62 18.52 18.52	rs np; High c np; Low d 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.88 15.02 14.89 14.83 14.92 14.83	leg; C eg; C Fuel (Lt) <u>Consumed</u> 3.78 3.72 3.83 3.74 3.78 3.65 3.60 3.69 3.69 3.64 3.65 	9813 16.3 23.1 Fuel 1 29.6 30.2 31.3 31.6 33.0 34.3 34.3 34.3 36.0 37.4 38.0 36.7 37.4 38.0 39.4 38.0 39.4 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.9 49.4 49.9	Der In 0.829 0.828 0.828 0.826 0.826 0.825 0.824 0.825 0.824 0.823 0.822 0.822 0.822	sity 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.50 15.36 15.37 15.41 15.33 15.24 15.24 15.28 15.21	nple d (kg) Out 12.41 12.47 12.38 12.34 12.14 12.26 12.20 12.24 12.23 12.26 12.14 12.09 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.13 3.17 3.15 3.18 3.14 3.10 3.10 3.181 0.0560 1.8%	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0203 0.0201 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 0.0200 0.0203 1.6%	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.6330 35.8306 35.6330 35.8394 35.5234 35.9449 36.2662 35.5240 
SPECIF Truck No Date: Run No 12 23 4 4 5 6 6 6 77 8 8 9 10 11 12 13 14 15 16 16 16 16 17 20 5 10 10 11 12 20 5 10 10 10 10 10 10 10 10 10 10 10 10 10	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.31 11.47 11.55 12.03 12.10 12.10 12.15 12.45	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Load     Tonne       1044     966       100     92       999     933       988     89       923     933       933     933       933     933       933     944       4.06151     4.3%	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Sec: 32 29 30 27 29 26 28 27 27 27 27 27 27 27 27 27 27	CK TRIAL       Haul Time       Mins       1.53       1.48       1.50       1.45<	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.85 18.87 18.87 18.62 18.77 18.62 18.64 18.64 18.62 18.52 18.52 18.52	rs np; High c np; Low d 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 14.92 14.83 14.83 14.83	leg; C eg; C Fuel (Lt) Consumed 3.78 3.72 3.83 3.74 3.78 3.67 3.77 3.68 3.65 3.77 3.69 3.69 3.69 3.69 3.64 3.65 	9813 16.3 23.1 Fuel 1 29.66 30.2 31.3 31.6 33.0 34.3 34.9 36.0 36.7 37.4 38.0 36.7 37.4 38.0 38.6 39.1 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.827 0.826 0.825 0.824 0.825 0.824 0.823 0.823 0.823 0.823 0.822 0.821	sity 0.823 0.821 0.820 0.819 0.817 0.817 0.817 0.817 0.816 0.815 0.815 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.36 15.37 15.40 15.33 15.24 15.33 15.24 15.30 15.21	nple d 1 (kg) 0ut 12.41 12.47 12.38 12.34 12.14 12.14 12.26 12.20 12.24 12.23 12.26 12.14 12.09 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.16 3.13 3.17 3.15 3.18 3.14 3.10 3.10 3.181 0.0560 1.8%	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0203 0.0200 0.0201 0.0200 0.0207 0.0200 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.6330 35.8394 35.5234 35.5234 35.5240 36.2662 35.5240 36.2662 35.5240
SPECIF Truck No Date: TREATE Run No 1 2 3 3 4 4 5 6 7 7 8 9 10 11 12 13 14 15 16 Mean Std Dev C.V	C FUEL C Time 10.30 10.40 10.47 10.55 11.03 11.12 11.20 11.30 11.12 11.20 11.30 11.12 12.03 12.10 12.18 12.35 12.45	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       Load     Tonne       104     96       100     92       999     93       988     89       923     93       933     93       933     93       933     93       933     93       94     4.06151       4.3%     Load kg	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secc 322 29 300 277 279 26 28 28 277 277 277 277 277 277 277 277 2	Haul Time Mins 1.53 1.48 1.50 1.45 1.45 1.45 1.45 1.45 1.45 1.45 1.45	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.87 18.52 18.77 18.62 18.77 18.62 18.71 18.69 18.71 18.69 18.71 18.59 18.52	rs np; High c np; Low d 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 14.92 14.83 14.92 14.85 14.87	leg; C eg; C Fuel (Lt) Consumed 3.78 3.72 3.83 3.74 3.74 3.77 3.68 3.67 3.77 3.68 3.65 3.70 3.69 3.69 3.69 3.69 3.69 3.69 3.69 3.64 3.65 5.72 5	9813 16.3 23.1 Fuel 1 1 29.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 36.7 36.0 38.6 38.6 39.1 39.4 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.827 0.826 0.825 0.825 0.825 0.825 0.823 0.823 0.823 0.823 0.822 0.822	sity Out 0.823 0.821 0.819 0.818 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.30 15.30 15.33 15.24 15.33 15.24 15.21	nple d (kg) Out 12.41 12.47 12.38 12.34 12.26 12.20 12.24 12.26 12.20 12.24 12.26 12.14 12.09 12.16 12.19 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.20 3.30 3.22 3.25 3.16 3.24 3.13 3.17 3.15 3.18 3.14 3.14 3.10 3.10 3.10 5.18 3.18 3.18 3.18 3.19 5.18	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 0.0201 0.0203 1.6%	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8304 35.8394 35.6330 35.8394 35.5234 35.5240 35.5240 35.5240 35.8329 0.5904 1.6%
SPECIF Truck No Date: TREATE Run No 1 2 3 4 4 5 6 7 7 8 9 10 11 12 13 14 15 16 Mean Std Dev C.V % CHAN	C FUEL C D Time 10.30 10.40 10.40 10.47 10.55 11.03 11.12 11.30 11.13 11.12 11.33 11.12 11.35 12.03 12.10 12.18 12.45 C Baseline	ONSUMP       RD100     22/04/98       22/04/98     22/04/98       100     92       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       93     93       94     4.06151       4.3%     Load kg	Haul Mins 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TRU Secc 29 30 27 29 26 28 28 27 27 27 27 27 27 27 27 27 27	Haul Time       Mins       1.53       1.48       1.50       1.45       1.46       0.0262       1.8%       Haul Time	Engine H Amb; Ter Amb; Ter 19.36 18.85 18.87 18.52 18.62 18.64 18.69 18.71 18.62 18.52 18.61 18.52	rs np; High c np; Low d 15.58 15.12 15.22 15.11 15.09 14.86 15.00 14.94 14.99 14.83 14.92 14.83 14.92	leg; C eg; C 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	9813 16.3 23.1 Fuel 1 1 9.6 30.2 31.3 31.6 33.0 33.7 34.3 34.9 36.0 38.6 39.1 39.4 40.5	Temp Ou 38.0 41.4 42.8 43.5 45.2 46.1 46.2 46.8 47.4 48.0 48.1 48.4 48.9 49.4 49.4 49.4 49.9	Der In 0.829 0.828 0.828 0.828 0.825 0.825 0.825 0.825 0.825 0.823 0.823 0.823 0.823 0.822 0.821	sity Out 0.823 0.821 0.820 0.819 0.818 0.817 0.817 0.817 0.817 0.816 0.816 0.816 0.815 0.815	Fuel San Corrected In 16.05 15.60 15.60 15.30 15.30 15.36 15.37 15.40 15.33 15.24 15.33 15.24 15.33 15.24	nple d (kg) Out 12.41 12.47 12.38 12.34 12.26 12.20 12.24 12.26 12.20 12.24 12.26 12.11 12.19 12.11	Density 0.825 0.839 Fuel (kg) Consumed 3.23 3.20 3.30 3.22 3.25 3.16 3.24 3.14 3.14 3.14 3.14 3.14 3.10 3.181 0.0560 1.8% Fuel (kg) Consumed	Temp Deg C 35.4 15 Fuel (kg) Per Tonne 0.0192 0.0200 0.0201 0.0200 0.0201 0.0200 0.0201 0.0202 0.0201 0.0203 0.	Tonne km Per kg Fuel 37.4782 35.9676 35.8204 34.8382 36.0696 35.7674 35.9827 34.8416 35.8806 35.6330 35.8394 35.5234 35.5240 36.2662 35.5240 35.5240 35.5240 35.5240 70000 km Per kg Fuel

SPECIFIC	C FUEL C	ONSUMP	TION	TRU	CK TRIAL												-
Customer	:	BORAL C	COOL	JARL	00	Engine Hr	rs		9615				Fuel San	nple	Density	Temp Deg C	
Date:		11/05/98				Amb; Ten	np; High d	eg; C	19.6						0.822	36.2	
Truck No;		RD102				Amb; Ten	np; Low de	eg; C	18.8				Correcte	d	0.837	15	J
Make/Mod	lel	Cat 777C				Circuit Dis	stance		720m								
Truck Wei	ght TED	64 Ionne															
	Time	Lood	Lloui	Time	Haul Time	Fuel	(14)		Fuel	Tama	Der	oit (	- Fue	(///		Fuel (kg)	Tonno km
Run No	Time	Toppes	Mine	Soc	⊓aui Time Mine	In			Fuei	Temp	Der		rue In	l (kg)	Consumed	Puer (kg)	Por ka Euol
1	14 50	75	1	26	1 43	18 47	14.88	3 59	34.2	43.0	0.823	0.817	15.21	12.16	3.05	0.0220	32 7967
2	15.03	86	1	26	1.43	19.21	15 49	3.72	35.0	45.4	0.823	0.816	15.81	12.10	3.17	0.0212	34 0420
3	15.21	83	1	26	1.43	19.17	15.53	3.64	35.2	47.1	0.823	0.814	15.77	12.65	3.13	0.0213	33.8411
4	15.33	85	1	26	1.43	19.41	15.72	3.69	35.0	48.1	0.823	0.814	15.97	12.79	3.18	0.0214	33.6899
5	15.52	77	1	27	1.45	19.53	15.70	3.83	36.3	49.5	0.822	0.813	16.05	12.76	3.29	0.0234	30.8130
6	16.10	73	1	30	1.50	20.08	16.19	3.89	37.1	50.9	0.821	0.812	16.49	13.14	3.35	0.0245	29.4035
7	16.20	68	1	26	1.43	18.74	15.19	3.55	34.9	51.3	0.823	0.811	15.42	12.32	3.10	0.0235	30.6671
8	16.30	83	1	27	1.45	19.39	15.63	3.76	36.0	51.1	0.822	0.812	15.94	12.68	3.26	0.0222	32.4658
9	16.37	70	1	26	1.43	18.86	15.26	3.61	37.0	51.5	0.821	0.811	15.49	12.38	3.12	0.0233	30.9469
10	16.49	78	1	29	1.48	19.93	16.07	3.87	38.0	51.6	0.821	0.811	16.36	13.03	3.33	0.0234	30.7148
11	16.57	76	1	28	1.47	19.44	15.66	3.78	38.4	51.9	0.820	0.811	15.95	12.70	3.25	0.0232	31.0397
12	17.08	83	1	26	1.43	19.39	15.62	3.77	38.4	52.0	0.820	0.811	15.91	12.67	3.24	0.0220	32.6707
13	17.18	63	1	24	1.40	18.39	14.58	3.82	38.0	51.8	0.821	0.811	15.09	11.82	3.27	0.0258	27.9362
14	17.20	57	1	24	1.40	18.53	14.90	3.40	38.6	52.1	0.820	0.011	15.11	12.13	2.90	0.0246	29.2300
15	17.30	83	1	28	1.42	19.33	14.37	3.30	37.9	52.4	0.820	0.811	15.20	12.13	3.07	0.0224	32.7200
10	17.56	81	1	28	1.47	19,398	15 731	3.67	37.7	52.4	0.821	0.811	15.92	12.72	3.17	0.0219	32 8939
17			· ·			10.000		0.07	0	02.1	0.021	0.011	10.02		0.11	0.02.10	02.0000
Mean		76			1.44			3.70							3.190	0.0229	31.572
Std Dev		8.28829			0.0272			0.1252							0.1071	0.0013	1.7726
C.V		10.9%			1.9%			3.4%							3.4%	5.8%	5.6%
Truck No:		RD102				Engine Hr	rs an: Lliab d	og: C	9768				Fuel San	nple	Density	Temp Deg C	]
Date.		22/03/90				Amb: Ten	np, Fightu np: Low de	ey, C	23.4				Corrected	4	0.820	35.4	
						74110, 1011	np, 2011 ac	.g, O	20				Concolo	a	0.000	10	1
TREATE	D																
Run No	Time	Load	Haul	Time	Haul Time	Fuel	(Lt)	Fuel (Lt)	Fuel	Temp	Der	nsity	Fue	l (kg)	Fuel (kg)	Fuel (kg)	Tonne km
		Tonnes	Mins	Sec	Mins	In	Óut	Consumed	In	Ou	In	Out	In	Öut	Consumed	Per Tonne	Per kg Fuel
1	8.03	92	1	30	1.50	19.81	15.86	3.95	23.3	35.1	0.834	0.825	16.51	13.09	3.43	0.0220	32.7882
2	8.14	92	1	30	1.50	19.76	15.80	3.95	24.3	36.0	0.833	0.825	16.45	13.03	3.42	0.0219	32.8263
3	8.23	93	1	28	1.47	19.36	15.53	3.84	25.1	37.3	0.832	0.824	16.12	12.79	3.33	0.0212	33.9517
4	8.34	103		30	1.50	19.82	15.85	3.98	27.3	38.7	0.831	0.823	16.47	13.03	3.43	0.0206	35.0345
5	8.43	101		29	1.48	19.74	15.85	3.90	29.0	40.1	0.830	0.822	16.38	13.02	3.36	0.0203	35.3888
6	8.53	114	1	31	1.52	19.87	15.91	3.95	30.0	40.9	0.829	0.821	16.46	13.07	3.40	0.0191	37.7077
/ 8	9.03	90		20	1.47	19.24	15.40	3.70	31.1	41.5	0.020	0.820	15.93	12.09	3.24	0.0203	35.0029
9	9.20	107	1	28	1.47	19.35	15.40	3.86	32.0	42.0	0.827	0.820	16.00	12.70	3.30	0.0203	37 3520
10	9.30	95	1	28	1.47	19.25	15.46	3.80	33.7	43.4	0.826	0.819	15.91	12.66	3.24	0.0204	35.3106
11	9.38	96	1	27	1.45	19.23	15.42	3.81	34.0	43.5	0.826	0.819	15.88	12.63	3.25	0.0203	35.3987
12	9.47	92	1	26	1.43	19.09	15.40	3.69	34.8	44.0	0.825	0.819	15.75	12.61	3.15	0.0202	35.7047
13	9.57	94	1	26	1.43	19.10	15.37	3.72	34.9	44.6	0.825	0.819	15.76	12.58	3.18	0.0201	35.8152
Mean		98			1.47			3.85							3.305	0.0205	35.2537
Std Dev		6.71011			0.0259			0.0938							0.0968	0.0008	1.4386
C.V		6.9%			1.8%			2.4%							2.9%	4.1%	4.1%
																	·
% CHAN	26.	I oad ko		1	Haul Time										Fuel (ka)	Eugl (kg)	Lonne km
u reaten-l		Louding			Miss										Conciliance -	Por Tonn-	Por kg Eust
Dei	Baseline	2000 119			Mins			Consumed							Consumed	Per Tonne	Per kg Fuel
Base	Baseline eline	28.96%			Mins 2.18%			Consumed 3.85%							Consumed 3.63%	Per Tonne -10.6%	Per kg Fuel 11.7%

Custome:     BORAL COOLJLARLOO     Engine His     4480     Fuel Surple     Bends     Engine His     4480       Date:     Construct     Casts     Anth. Temp; High deg. C     2.6.5     Construct     No	SPECIFIC	FUEL C	ONSUMP	TION	TRU	CK TRIAL												_
Date: Track No. Bit 1200598     Amb. Temp. Ling deg. C     25.5. 2.000     Date:	Customer	:	BORAL C	COOL	JARL	.00	Engine H	rs		4460				Fuel San	nple	Density	Temp Deg C	
Track No:     RD163     Amb. Temp: Low deg.C     15.1     Connected     0.837     15       Wate Model UNTEX-TE     64 Tornor     20m	Date:		12/05/98				Amb; Ter	mp; High	deg; C	26.5				-		0.822	36.2	
Make Male   Call T/PC   Circuit Distance   7201     Mark Weigt   94 Torine   More Time Hout Time Hout Time Hout Time In Out Consumed In Out Con	Truck No;		RD103				Amb; Ter	mp; Low o	deg; C	15.1				Correcte	d	0.837	15	
Tinck wagi NUTREXTED     Øf long       Run Ko Torresh Mong Seed, Minn 1     Fisel (10)     Fisel (10) <td>Make/Mod</td> <td>el</td> <td>Cat 777C</td> <td></td> <td></td> <td></td> <td>Circuit Di</td> <td>stance</td> <td></td> <td>720m</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Make/Mod	el	Cat 777C				Circuit Di	stance		720m								
Run No     Time     Load     Head Time (Head Time)     Fuel (Li)     Fuel (Li) <th< td=""><td>UNTREA</td><td>ght TED</td><td>64 Ionne</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	UNTREA	ght TED	64 Ionne															
Tornes     Ims     Im     Out     Im     Im <th< td=""><td>Run No</td><td>Time</td><td>Load</td><td>Haul</td><td>Time</td><td>Haul Time</td><td>Fuel</td><td>( Lt)</td><td>Fuel (Lt)</td><td>Fuel</td><td>Temp</td><td>Der</td><td>sity</td><td>Fuel</td><td>(kg)</td><td>Fuel (kg)</td><td>Fuel (kg)</td><td>Tonne km</td></th<>	Run No	Time	Load	Haul	Time	Haul Time	Fuel	( Lt)	Fuel (Lt)	Fuel	Temp	Der	sity	Fuel	(kg)	Fuel (kg)	Fuel (kg)	Tonne km
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Tonnes	Mins	Sec	Mins	In	Out	Consumed	In	Out	In	Out	In	Out	Consumed	Per Tonne	Per kg Fuel
2   7.40   96   1.30   1.50   19.28   15.55   3.83   3.41   45.6   0.824   0.815   15.87   12.52   3.38   0.0210   33.9033     4   8.00   65   1.28   1.44   19.11   15.26   3.81   44.6   0.222   0.814   15.81   12.50   3.31   0.0212   33.9033     5   0.517   74   1.30   1.52   3.83   0.44   48.7   0.822   0.814   15.51   11.90   3.32   0.0222   32.668     7   8.34.6   3.51   1.28   1.42   1.83   3.85   3.75   48.8   0.821   0.813   1.477   1.17   0.05   0.0222   32.662     10   9.05   8.8.4   97   1.49   1.30   1.43   3.61   1.42   5.17   0.819   0.821   0.811   1.477   1.178   0.80   0.0207   35.822     11   9.8.54   97   1.43   1.8.01   1.4.33   3.64   3.61   0.421   0.811   1.478   1.1.88   3.00	1	7.31	79	1	31	1.52	19.43	15.55	3.88	33.1	44.1	0.824	0.816	16.01	12.69	3.32	0.0232	31.0197
3   1/22   1/42 <t< td=""><td>2</td><td>7.40</td><td>96</td><td>1</td><td>30</td><td>1.50</td><td>19.28</td><td>15.35</td><td>3.93</td><td>34.1</td><td>45.6</td><td>0.824</td><td>0.815</td><td>15.87</td><td>12.52</td><td>3.36</td><td>0.0210</td><td>34.2956</td></t<>	2	7.40	96	1	30	1.50	19.28	15.35	3.93	34.1	45.6	0.824	0.815	15.87	12.52	3.36	0.0210	34.2956
4   0.0   03   1   20   1.47   10.17   12.62   3.03   3.0   42.0   0.022   0.014   15.84   12.42   0.0214   33.022   0.014   15.84   12.48   3.02   0.0214   33.022   0.0214   33.022   0.0214   33.022   0.0214   33.022   0.0214   33.022   0.0214   33.022   0.0214   33.022   0.0216   33.022   0.0216   13.02   12.60   13.02   12.60   13.02   12.60   13.02   12.60   13.02   12.60   13.02   14.01   14.02   14.01   14	3	7.52	92	1	29	1.48	19.21	15.34	3.87	34.8	46.8	0.823	0.815	15.81	12.50	3.31	0.0212	33.9033
a)     8,21     94     1,22     1,42     18,26     377     487     0,821     0,811     14,90     3,72     20,022     37     8,84     0,813     15,11     14,90     3,72     20,022     37     8,84     0,813     15,11     14,20     13,025     37     848     0,821     0,813     15,11     14,20     0,022     37,848     0,821     0,813     14,77     11,71     3,05     0,0020     34,853     35,395     36,97     499     0,821     0,813     14,77     11,71     3,05     0,0020     34,8553     39,893     36,97     48,9     0,811     4,77     14,73     14,80     14,43     14,43     3,02     14,47     14,33     34,41     14,33     14,43     3,02     14,43     14,43     34,44     14,43     14,44     14,83     3,74     44,72     0,826     0,811     14,71     14,85     3,44,70     3,28     0,814     15,42     12,71     3,26     0,026     3,44,77     14,82     0,814 <td< td=""><td>4</td><td>8.00</td><td>65 02</td><td>1</td><td>28</td><td>1.47</td><td>19.11</td><td>15.28</td><td>3.83</td><td>30.1</td><td>48.0</td><td>0.822</td><td>0.814</td><td>15.71</td><td>12.43</td><td>3.27</td><td>0.0220</td><td>32.7783</td></td<>	4	8.00	65 02	1	28	1.47	19.11	15.28	3.83	30.1	48.0	0.822	0.814	15.71	12.43	3.27	0.0220	32.7783
P     8.22     7.6     1     23     138     14.48     14.83     3.63     7.8     48.8     0.821     0.813     14.70     12.06     3.10     0.0221     23.262       8     8.46     83     1     25     1.43     19.11     15.25     3.06     3.07     4.99     0.800     0.812     12.366     12.33     3.27     0.0003     53.852       10     9.05     88     1.28     1.43     18.00     1.433     3.61     1.42     50.7     0.918     0.811     1.46     0.00207     3.4583       12     10.31     79     1     2.6     1.43     18.45     1.47     3.62     4.14     1.476     1.476     1.476     1.516     1.618     1.1476     1.203     3.15     0.0020     3.44     5.0     3.63     3.61     1.512     1.83     3.63     3.64     0.813     1.502     1.83     3.69     3.24     4.90     0.821     0.813     1.502     1.83     3.65	6	8.21	74	1	25	1.30	18.39	14 74	3.65	37.1	40.2	0.022	0.813	15.04	11.40	3.10	0.0214	31 8565
8   8.46   83   1   25   1.42   18.02   1.44   1.361   30.9   44.71   1.477   1.477   1.477   1.071   30.6   0.0208   34.86   35.3985     10   9.05   88   1.28   1.47   18.00   14.39   3.01   14.12   50.7   0.819   0.812   14.73   11.68   3.06   0.0201   35.8985     11   9.05   88   1.28   1.47   18.04   14.43   3.32   1.43   15.15   11.70   3.06   0.0202   3.4850     12   10.31   79   1.27   1.45   18.71   14.85   3.36   3.2   4.02   0.326   0.814   15.42   12.17   3.28   0.0202   4.5747     14   10.59   8.9   1.26   1.43   18.26   1.46   3.66   3.77   4.77   0.22   0.814   15.12   1.03   1.0021   3.3238     16   11.22   76   1.26   1.43   18.26   1.46   3.66   3.77   1.031   1.502   1.197	7	8.32	76	1	23	1.38	18.46	14.83	3.63	37.8	48.8	0.821	0.813	15.16	12.06	3.10	0.0221	32,5627
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	. 8	8.46	83	1	25	1.42	18.02	14.41	3.61	39.9	49.7	0.819	0.813	14.77	11.71	3.05	0.0208	34.6538
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	9	8.54	97	1	26	1.43	19.11	15.25	3.86	39.7	49.9	0.820	0.812	15.66	12.39	3.27	0.0203	35.3985
11   9.17   84   1   26   1.4.3   18.0.4   14.4.4   3.8.2   41.8   51.5   0.818   0.811   14.7.6   11.7.0   3.06   0.0207   3.4.8506     12   10.31   79   1   27   1.45   18.7.0   14.98   3.77   3.2   4.4.7   0.826   0.816   15.41   12.18   3.23   0.0208   34.5747     14   10.95   83   1   26   1.4.3   18.26   14.61   3.66   3.7.7   4.7.8   0.821   0.811   15.0   11.98   3.3.15   0.0206   3.8.738   0.821   0.813   15.70   12.41   3.2.6   0.0216   83.3.3786   0.921   0.813   15.70   12.41   3.2.6   0.0216   83.3.3238   0.921   0.813   15.70   12.41   3.2.6   0.0216   83.3.3238   0.921   0.813   15.70   12.41   3.2.6   0.0214   33.626   0.921   0.833   15.70   12.41   3.2.6   0.0214   33.626   0.57   0.3.6%   4.1.1%   4.1%   4.1%   4.1% <t< td=""><td>10</td><td>9.05</td><td>88</td><td>1</td><td>28</td><td>1.47</td><td>18.00</td><td>14.39</td><td>3.61</td><td>41.2</td><td>50.7</td><td>0.819</td><td>0.812</td><td>14.73</td><td>11.68</td><td>3.06</td><td>0.0201</td><td>35.8222</td></t<>	10	9.05	88	1	28	1.47	18.00	14.39	3.61	41.2	50.7	0.819	0.812	14.73	11.68	3.06	0.0201	35.8222
12   10.31   79   1   27   1.45   18.71   14.85   3.86   3.25   40.2   0.825   0.819   15.42   12.17   3.26   0.0228   3.45747     14   10.59   89   1   20   1.43   18.45   14.76   3.66   3.7   47.2   0.823   0.814   15.18   12.03   3.15   0.0208   3.45747     14   10.96   3   26   1.43   18.29   1.473   3.56   3.7   47.2   0.823   0.814   15.18   12.03   1.35   0.0213   3.37985     16   11.22   76   1   26   1.44   19.13   15.28   3.80   49.6   0.821   0.813   15.02   1.197   3.26   0.0214   33.652     Std Dev   7.10737   0   0.0355   0   0.1299   0   0   1.44   19.0   0.0214   3.652   3.652   3.66   0.1429   0.1429   0.1429   0.1429   0.224   3.652   3.66   0.1429   0.1529   0.1429   0.1529   0.1529<	11	9.17	84	1	26	1.43	18.04	14.43	3.62	41.8	51.5	0.818	0.811	14.76	11.70	3.06	0.0207	34.8506
13   10.45   91   1   27   1.45   18.70   1.493   3.77   33.2   44.7   0.824   0.826   0.816   15.41   12.18   3.23   0.0206   34.4731     15   11.09   83   1   26   1.43   18.26   14.61   3.66   35.7   47.80   0.821   0.811   15.02   11.99   3.15   0.0206   34.9733     17   11.34   88   1   29   1.44   19.13   15.28   3.85   38.0   48.6   0.821   0.811   15.70   12.41   3.28   0.0218   33.0599     17   11.34   88   1   29   1.44   19.13   15.28   3.85   38.0   48.6   0.821   0.811   15.70   12.41   3.28   0.0214   33.6595     Sid Dev   7.10737   0.0355   0.1289   -   -   3.199   0.0214   33.652     Sid Dev   7.10737   0.0355   0.1289   -   -   3.199   0.0214   33.659   3.64   3.76   3.4651   1.50<	12	10.31	79	1	27	1.45	18.71	14.85	3.86	32.5	40.2	0.825	0.819	15.42	12.17	3.26	0.0228	31.5843
14   10.59   89   1 26   1.43   18.48   14.78   3.67   3.47   4.72   0.622   0.814   15.20   11.38   3.15   0.0206   3.37985     16   11.22   76   1   26   1.43   18.29   14.73   3.56   3.7   4.90   0.821   0.813   15.70   12.41   3.28   0.0218   33.3298     17   11.34   88   1   29   1.48   19.13   15.28   3.85   0.49.6   0.821   0.813   15.70   12.41   3.28   0.0214   33.3682     Std Dev   7.10737   0.0355   0.1289   0.1289   0   0.1148   0.0009   1.3723     CV   8.3%   2.4%   0.1289   0.1289   0   0.148   0.0009   1.3723     Date:   2204/98   Engine Hrs   4641   474   0.262   35.4   0.76   35.6   4641   0.00214   36.6   4.1%   0.015   0.833   15      2204/98   Engine Hrs   4641   0.166.5   0.27	13	10.45	91	1	27	1.45	18.70	14.93	3.77	33.2	44.7	0.824	0.816	15.41	12.18	3.23	0.0208	34.5747
15   11.09   83   1 26   14.31   18.26   14.73   3.56   37.4   49.0   0.821   0.813   15.02   11.91   3.13   0.0213   33.3699     17   11.34   88   1   29   1.48   19.13   15.26   11.97   3.069   0.0214   33.3699     Mean   85   1.45   3.75   0   0   0.1148   0.00214   33.659     Std Dev   7.10737   0.0355   0.1289   0   0   0.1148   0.00014   3.6%   4.1%   4.1%     SPECIFIC FUEL CONSUMPTION TRUCK TRIAL   Truck No:   RD103   Engine Hrs   4641   6421   0.025   3.54   0.0214   3.6%   4.1%   4.1%   1.50   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.52   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50   1.50	14	10.59	89	1	26	1.43	18.45	14.78	3.67	34.7	47.2	0.823	0.814	15.18	12.03	3.15	0.0206	34.9733
16   11.22   76   1   28   1.4.3   18.29   14.7.3   3.56   37.4   49.0   0.821   0.813   15.20   11.97   3.05   0.0218   33.30599     In   11.34   88   1   29   1.45   3.375   1   1   1.24   3.28   0.0218   33.30599     Std Dav   7.10737   0.0355   0.1289   1   1   0.1148   0.0009   1.3723     C.V   8.3%   2.4%   3.4%   3.4%   1   1   0.1148   0.0009   1.3723     C.V   8.3%   2.4%   3.4%   0.1289   1   3.6%   4.1%   4.1%     SPECIFIC FUEL CONSUMPTION TRUCK TRIAL     Truck No:   R2103   Engine Hrs   4641   4.1%   1.41   1.41%   4.1%   4.1%      Time   Load   Haul Time/Haul Time   Fuel (Lt)   Fuel Temp   Density   Temp Engine Hrs   4.641     Time   Load   Haul Time/Haul Time   Fuel (Lt)   Fuel Temp   Density   Fuel (kg)   Fuel (kg)	15	11.09	83	1	26	1.43	18.26	14.61	3.66	35.7	47.8	0.822	0.814	15.02	11.89	3.13	0.0213	33.7985
Image:	16	11.22	76	1	26	1.43	18.29	14.73	3.56	37.4	49.0	0.821	0.813	15.02	11.97	3.05	0.0218	33.0599
Mean     85     1.45     3.75     1     1     3.199     0.0214     33.652       Std Dev     7.10737     0.0355     0.1289     0     0.1148     0.0009     1.3723       CV     8.3%     2.4%     3.4%     0     0.1148     0.0009     1.3723       CV     8.3%     2.4%     3.4%     0     0     0.1148     0.0009     1.3723       CV     8.3%     2.4%     3.4%     0     0.825     55.4       Date:     22/04/98     Amb; Temp; High deg; C     20.2     0.825     35.4     Corrected     0.839     15       Teme Mins See: Mins     Mm; Temp; High deg; C     20.2     0.825     0.817     Tess     2.37     3.22     0.0206     34.9214       1     16.04     92     1<30	17	11.34	88	1	29	1.48	19.13	15.28	3.85	38.0	49.6	0.821	0.813	15.70	12.41	3.28	0.0216	33.3238
Image     0.133     0.1289     0.1148     0.0009     1.3723       C.V     8.3%     2.4%     3.4%     0.1148     0.1148     0.0009     1.3723       C.V     8.3%     2.4%     3.4%     0     3.6%     4.1%     4.1%       Septimized and the section of the sect	Moon		95			1.45			2 75							2 100	0.0214	22.652
Old Del     1.01/31     0.0333     0.0323     0.0323     0.0323     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0233     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.0243     0.0333     1.024     0.0333     1.0253     0.0333     1.0243     0.0333     1.0253     0.011	Std Dev		7 10737			0.0355			0 1280							0 11/18	0.0214	1 3723
SPECIFIC FUEL CONSUMPTION TRUCK TRIAL     Engine Hrs     4641       Truck No:     RD103     Engine Hrs     4641       Date:     22/04/98     Amb; Temp; High deg; C     20.2       Amb; Temp; Low deg; C     14     16     0.825     35.4       TREATED     Time     Load     Haul Time     Fuel (Lt)     Fuel Temp     Density     Fuel (kg)     Fuel (kg)     Tonne km       1     16.04     92     1 30     1.50     18.89     15.13     3.76     35.5     46.6     0.825     0.812     0.0206     34.9214       2     16.04     92     1 30     1.50     18.89     15.13     3.76     35.5     46.6     0.825     0.817     15.58     12.37     3.22     0.0206     34.9214       2     16.15     102     1 30     1.50     18.89     15.13     3.76     35.5     46.6     0.825     0.817     15.54     3.22     0.0201     35.7748       4     16.35     192     1.48     18.95     15.66	C.V		8.3%			2 4%			3.4%							3.6%	4 1%	4 1%
Amb; Temp; Low deg; C     14     Corrected     0.839     15       TREATED       Run No     Time     Load     Hau Time     Fuel (Lt)     Fuel (Lt)     Fuel (Kg)     <	Truck No: Date:		RD103 22/04/98				Engine H Amb; Ter	rs np; High	deg; C	4641 20.2				Fuel San	nple	Density 0.825	Temp Deg C 35.4	
TREATED       Run No     Time     Load     Haul Time/Main Sec     Nins     Fue/(Lt)     Fue/(Lt)     Fue/(Lt)     Fue/(Lt)     Fue/(Rg)							Amb; Ter	np; Low c	leg; C	14			l	Correcte	a	0.839	15	
Run No     Ime Tonne     Load Min     Fuel (Li) Sees     Fuel (Li) Mins     Fuel (Li) Consumed Consumed In     Out No     Consumed In     Out Out     Consumed Consumed Consumed In     Fuel (Kg) No     Fuel (Kg) Consumed In     Fuel (Kg) No     Fuel (Kg) Consumed Per Tonne     Fuel (Kg) Per Tonne     Fuel (Kg)	TREATER	)			-			4.0	<b>E</b> 140		- 1			_		=		<del></del>
Infine     Wrins     Sets     Wrins     In     Out     Obs     In     Out     In     In <thin< th="">     In     <thin< th=""></thin<></thin<>	Run No	Time	Load	Haul	Time	Haul Time	Fuel	(Lt)	Fuel (Lt)	Fuel	Temp	Der	isity	Fuel	(kg)	Fuel (kg)	Fuel (kg)	Tonne km
1   10.04   32   1   30   1.00   18.05   19.13   3.16   30.3   40.0   0.828   0.828   12.31   3.22   0.000   34.921     3   16.25   100   1   29   1.48   19.13   15.31   3.82   31.7   44.7   0.828   0.828   15.84   12.58   3.26   0.000   35.7748     4   16.35   95   1   28   1.47   18.70   15.00   3.69   32.9   46.3   0.827   0.817   15.46   12.26   3.19   0.0201   35.8326     5   16.44   96   1   28   1.47   18.71   15.05   3.66   34.1   47.5   0.826   0.816   15.45   12.29   3.16   0.0198   36.4082     6   16.54   97   1   29   1.48   14.82   3.66   36.5   48.3   0.824   0.816   15.45   12.29   3.16   0.0198   36.4082     7   17.07   93   1   27   1.45   18.89   14.92   3	1	16.04	Tonne	IVIINS 1	20		10 00	15 12	Consumed	25 F	46.5	0.925	0.917	15 59	12.27	Consumed	Per Tonne	Per kg Fuel
1   1.00   1.00   1.00   1.00   1.00   0.00   0.000   0.000   0.000   0.000   0.000   35.7748     4   16.35   95   1   28   1.47   18.70   15.00   3.69   32.9   46.3   0.827   0.817   15.83   12.26   3.19   0.0201   35.8326     5   16.44   96   1   28   1.47   18.70   15.00   3.69   32.9   46.3   0.827   0.816   15.45   12.29   3.16   0.0198   36.4082     6   16.54   97   1   29   1.48   18.95   15.26   3.69   35.4   48.4   0.825   0.816   15.64   12.45   3.18   0.0198   36.4181     7   17.07   93   1   27   1.45   18.69   14.98   3.71   37.3   48.8   0.824   0.816   15.23   12.09   3.14   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4	2	16.04	92	1	30	1.50	19.09	15.13	3.70	30.6	40.5	0.823	0.817	15.56	12.37	3.22	0.0200	36 6924
4   16.35   128   1.47   18.70   15.00   3.69   32.9   46.3   0.827   0.817   15.46   12.26   3.19   0.0201   35.8326     5   16.44   96   1   28   1.47   18.71   15.05   3.66   34.1   47.5   0.826   0.816   15.45   12.29   3.16   0.0198   36.4082     6   16.54   97   1   29   1.48   18.95   15.26   3.69   35.4   48.4   0.825   0.816   15.64   12.45   3.18   0.0198   36.4181     7   17.07   93   1   27   1.45   18.84   14.89   3.71   37.3   48.8   0.824   0.816   15.23   12.09   3.14   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.816   15.33   12.25   3.17   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03	3	16.10	102	1	29	1.00	19.12	15.31	3.82	31.7	44 7	0.828	0.818	15.83	12.00	3.30	0.0201	35 7748
5   16.44   96   1   28   1.47   18.71   15.05   3.66   34.1   47.5   0.826   0.816   15.45   12.29   3.16   0.0198   36.4082     6   16.54   97   1   29   1.48   18.95   15.26   3.69   35.4   48.4   0.825   0.816   15.64   12.45   3.18   0.0198   36.4181     7   17.07   93   1   27   1.45   18.69   14.98   3.71   37.3   48.8   0.824   0.816   15.23   12.20   3.17   0.0201   35.8369     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.43   12.25   3.17   0.0201   35.8369     10   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.30   3.00   0.0199   36.2482     11   17.50   10.4   1   30   1.50	4	16.35	95	1	28	1.47	18.70	15.00	3.69	32.9	46.3	0.827	0.817	15.46	12.26	3.19	0.0201	35.8326
6   16.54   97   1   29   1.48   18.95   15.26   3.69   35.4   48.4   0.825   0.816   15.64   12.45   3.18   0.0198   36.4181     7   17.07   93   1   27   1.45   18.48   14.82   3.66   36.5   48.3   0.824   0.816   15.23   12.09   3.14   0.0200   36.0143     8   17.18   94   1   27   1.45   18.69   14.98   3.71   37.3   48.8   0.824   0.816   15.39   12.21   3.17   0.0201   35.8366     9   17.28   94   1   29   1.48   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.43   12.25   3.17   0.0201   35.8366     9   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.30   3.00   0.0193   36.4482     11   17.50   10.4   1.30   1.50   19.33	5	16.44	96	1	28	1.47	18.71	15.05	3.66	34.1	47.5	0.826	0.816	15.45	12.29	3.16	0.0198	36.4082
7   17.07   93   1   27   1.45   18.48   14.82   3.66   36.5   48.3   0.824   0.816   15.23   12.09   3.14   0.0200   36.0143     8   17.18   94   1   27   1.45   18.69   14.98   3.71   37.3   48.8   0.824   0.816   15.39   12.21   3.17   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.43   12.25   3.17   0.0201   35.8369     10   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.30   3.30   0.0199   36.2482     11   17.50   104   1   30   1.50   19.33   15.45   3.88   39.9   50.0   0.822   0.815   15.68   12.58   3.30   0.0191   36.776     13   18.10   103   1   30   1.50	6	16.54	97	1	29	1.48	18.95	15.26	3.69	35.4	48.4	0.825	0.816	15.64	12.45	3.18	0.0198	36.4181
8   17.18   94   1   27   1.45   18.69   14.98   3.71   37.3   48.8   0.824   0.816   15.39   12.21   3.17   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.43   12.25   3.17   0.0201   35.8366     9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.60   12.25   3.17   0.0201   35.8366     10   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.35   3.23   0.0199   36.482     11   17.50   104   1   30   1.50   19.33   15.45   3.88   39.9   50.0   0.822   0.815   15.88   12.58   3.30   0.0191   37.196     13   18.10   103   1   30   1.50	7	17.07	93	1	27	1.45	18.48	14.82	3.66	36.5	48.3	0.824	0.816	15.23	12.09	3.14	0.0200	36.0143
9   17.28   94   1   28   1.47   18.75   15.03   3.71   38.2   49.4   0.823   0.815   15.43   12.25   3.17   0.0201   35.8349     10   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.30   3.30   0.0199   36.2482     11   17.50   104   1   30   1.50   19.19   15.40   3.79   39.5   49.9   0.822   0.815   15.78   12.55   3.23   0.0192   37.4901     12   18.00   109   1   30   1.50   19.24   15.39   3.85   40.5   50.5   0.821   0.815   15.88   12.58   3.30   0.0191   37.7196     13   18.10   103   1   30   1.50   19.24   15.39   3.85   40.5   50.5   0.821   0.814   15.88   12.53   3.27   0.0196   36.7796     Mean   99   1.48   3.76	8	17.18	94	1	27	1.45	18.69	14.98	3.71	37.3	48.8	0.824	0.816	15.39	12.21	3.17	0.0201	35.8366
10   17.38   102   1   29   1.48   18.97   15.10   3.87   38.8   49.7   0.823   0.815   15.60   12.30   3.30   0.0199   36.2482     11   17.50   104   1   30   1.50   19.19   15.40   3.79   39.5   49.9   0.822   0.815   15.78   12.55   3.23   0.0192   37.4901     12   18.00   109   1   30   1.50   19.33   15.45   3.88   39.9   0.822   0.815   15.78   12.55   3.30   0.0192   37.4901     13   18.10   103   1   30   1.50   19.24   15.39   3.85   40.5   50.5   0.821   0.814   15.80   12.53   3.27   0.0196   36.7796     Mean   99   1.48   3.76      3.223   0.0198   36.3054     Std Dev   5.1739   0.0191   0.0785      0.0569   0.0004   0.7501     C.V   5.3%   1.3%   2.1%	9	17.28	94	1	28	1.47	18.75	15.03	3.71	38.2	49.4	0.823	0.815	15.43	12.25	3.17	0.0201	35.8349
11   17.50   104   1   30   1.50   19.19   15.40   3.79   39.5   49.9   0.822   0.815   15.78   12.55   3.23   0.0192   37.4901     12   18.00   109   1   30   1.50   19.33   15.45   3.88   39.9   0.0822   0.815   15.88   12.58   3.30   0.0191   37.7196     13   18.10   103   1   30   1.50   19.24   15.39   3.85   40.5   50.5   0.822   0.814   15.80   12.53   3.27   0.0196   36.7796     Mean   99   1.48   3.76      3.223   0.0198   36.3054     Std Dev   5.1739   0.0191   0.0785      0.0569   0.0004   0.7501     C.V   5.3%   1.3%   2.1%     1.8%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2.1%   2	10	17.38	102	1	29	1.48	18.97	15.10	3.87	38.8	49.7	0.823	0.815	15.60	12.30	3.30	0.0199	36.2482
12   13:00   13	11	17.50	104	1	30	1.50	19.19	15.40	3.79	39.5	49.9	0.822	0.815	15.78	12.55	3.23	0.0192	37.4901
No. 10   No. 10   No. 13.24   No. 13.24   No. 33.85   40.3   So. 3   0.014   No. 12.03   So. 12.014   No. 12.03   No. 12.014   No. 12.03   No. 12.014   No. 12.03   No. 12.	12	18.00	109	1	30	1.50	19.33	15.45	3.88	39.9	50.0	0.822	0.815	15.88	12.58	3.30	0.0191	37.7196
Mean     99     1.48     3.76     3.223     0.0198     36.3054       Std Dev     5.1739     0.0191     0.0785     0.0569     0.0004     0.7501       C.V     5.3%     1.3%     2.1%     1.8%     2.1%     2.1%     1.8%     2.1%     2.1%       % CHANGE:     Load kg     Haul Time     Fuel (Lt)     Fuel (kg)     Fuel (kg)     Fuel (kg)     Forek m     Per kg Fuel       Baseline     15.29%     1.92%     0.20%     0.75%     7.4%     7.9%	13	10.10	103		30	1.50	19.24	15.59	3.65	40.0	50.5	0.021	0.014	15.60	12.55	3.21	0.0190	30.7790
Note     5.1739     0.0191     0.0785     0.0569     0.0004     0.7501       C.V     5.3%     1.3%     2.1%     1.8%     2.1%     2.1%     2.1%     2.1%     1.8%     2.1%     2.1%     0.0569     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.0004     0.7501     0.7501     0.0004     0.7501     0.7501     0.0004     0.7501     0.7501     0.0004     0.7501	Mean		99			1 48			3 76							3 223	0.0198	36 3054
C.V     5.3%     1.3%     2.1%     0.0001	Std Dev		5,1739			0,0191			0.0785							0.0569	0.0004	0.7501
% CHANGE: Treated-Baseline Load kg Haul Time Fuel (Lt) Fuel (kg) Fuel (kg) Tonne km   Baseline 15.29% 1.92% 0.20% 0.20% 0.75% -7.4% 7.9%	C.V		5.3%			1.3%			2.1%							1.8%	2.1%	2.1%
% CHANGE: Treated-Baseline Load kg Haul Time Fuel (Lt) Fuel (kg) Fuel (kg) Tonne km   Baseline 15.29% 1.92% 0.20% 0.20% 0.75% -7.4% 7.9%																		
Treated-Baseline     Mins     Consumed     Consumed     Per Tonne     Per kg Fuel       Baseline     15.29%     1.92%     0.20%     0.75%     -7.4%     7.9%	% CHANC	GE:	Load kg			Haul Time			Fuel (Lt)							Fuel (kg)	Fuel (kg)	Tonne km
Baseline     15.29%     1.92%     0.20%     0.75%     -7.4%     7.9%	Treated-E	Baseline				Mins			Consumed							Consumed	Per Tonne	Per kg Fuel
	Base	eline	15.29%			1.92%			0.20%							0.75%	-7.4%	7.9%

To prove the statistical significance of the difference in means between baseline and treated tests a Student t-test was performed.

t-test spreadsheets are included in the appendices.

#### BORAL COOLJARLOO Truck No.100 Efficiency Tests



BORAL COOLJARLOO Truck No.102 Efficiency Tests



#### BORAL COOLJARLOO Truck No.103 Efficiency Tests



### CONCLUSION

The results of this extensive multi-truck evaluation of the FTC catalyst at Boral Contracting Cooljarloo operation provides accurate and conclusive evidence of economic fuel consumption reductions.

The measured efficiency gain of the three-truck test fleet represents a 9.5% improvement.

Efficiency gains measured in the Cooljarloo test fleet, under normal operating conditions, correlate well with other haul truck tests conducted and also static carbon balance testing on this class of equipment over the past fifteen years.

#### BIBLIOGRAPHY

Koehler, D. & Doglio, J. (1987). SAE Technical Paper 872146: Benefits of Multifunctional Diesel Fuel Additives Demonstration in a Fleet Test. The Engineering Society For Advanced Mobility Land Sea And Space.

Appendix "A"

**"T" Test Spreadsheets** 

t test: Two Sample Ass	suming Equa	al Population Variances
Company	BORAL	
Site	Cooljarl	00
Truck	RD100	
Test:	Untreate	ed
Record		Tonne km/ kg Fuel
	1	32.1339
	2	31.8039
	3	31.9301
	4	34.3029
	5	32.9955
	6	30.4941
	7	34.7274
	8	33.9503
	9	33.4971
	10	33.5152
	11	30.8550
	12	31.6603
	13	33.7763
	14	33.4290
	15	32.7637
	16	34.2930
Mean		32.8830
Std Dev		1.275225428
Observations		16
l est:		
Descard		Tana a las (las Essal
Record	4	I onne km/ kg Fuel
	1	37.4782
	2	35.9070
	3	35.8204
	4	34.0302
	5	30.0090
	0	35.7074
	<i>/</i>	30.9027
	0	34.8410
	10	25.6220
	10	35,8304
	12	35 5234
	12	35 9//3
	10	35 9/99
	15	36 2662
	16	35 5240
	10	00.0240
Mean		35.8329
Std Dev		0.59035529
Observations		16
		Tonne km/ kg Fuel
Mean % change		9.0%
Confidence Interval		99%
Alpha		0.005
Degrees Of Freedom		30
t Critical Value		2.75
Hypothesis		Het $H_{a} = H_{a} = 0$
Hypothesis		$H_0: u_1 - u_2 = 0$

Conclusion:

t=

Since t= -8.40, is outside the range +/- 2.75 we reject  $H_0$  and accept  $H_1$  and conclude that the difference between FTC treated and untreated test means are significant at a 99 % confidence level.

-8.40

-	suming Equa	I Population Variances
Company	BORAL	
Site	Cooljarle	00
Truck	DT102	
Test:	Untreate	ed
Record		Tonne km/ kg Fuel
	1	32.7967
	2	34.0420
	3	33.8411
	4	33.6899
	5	30.8130
	6	29.4035
	7	30.6671
	8	32.4658
	9	30.9469
	10	30.7148
	11	31.0397
	1∠ 13	32.0/U/ 27 0362
	10	21.3002
	14	23.2000
	16	32.1200
	17	32,8039
	17	02.0000
Mean		31.6493
Std Dev		1.745992809
Observations		17
		·
Test:		
Record		Tonne km/ kg Fuel
	1	32.7882
	2	32.8263
	3	33.9517
	4	30.0345
	6	30.3000
	7	31.1011
		35 5520
	7 8	35.5529 35.4676
	7 8 9	35.5529 35.4676 37.3520
	7 8 9 10	35.5529 35.4676 37.3520 35.3106
	7 8 9 10 11	35.5529 35.4676 37.3520 35.3106 35.3987
	7 8 9 10 11 12	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
Man	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152
Mean	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152
Mean Std Dev	7 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 <u>35.2537</u> 1.438620198
Mean Std Dev Observations	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152 35.2537 1.438620198 13
Mean Std Dev Observations	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152 35.2537 1.438620198 13
Mean Std Dev Observations	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152 35.2537 1.438620198 13 Tonne km/ kg Fuel
Mean Std Dev Observations Mean % change	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152 35.2537 1.438620198 13 Tonne km/ kg Fuel 11.4% 90%
Mean Std Dev Observations Mean % change Confidence Interval Alpha	7 8 9 10 11 12 13	35.5529 35.4676 37.3520 35.3106 35.3987 35.7047 35.8152 35.8152 35.2537 1.438620198 13 Tonne km/ kg Fuel 11.4% 99% 0.005

#### Conclusion:

t Critical Value

Hypothesis

t=

Since t= -6.03, is outside the range +/- 2.76 we reject  $H_0$  and accept  $H_1$  and conclude that the difference between FTC treated and untreated test means are significant at a 99 % confidence level.

2.76

 $H_0: u_1 - u_2 = 0$  $H_1: u_1 - u_2 <> 0$ -6.03

t test: Two Sample Assuming Equ	ual Population Variances
Company BORA	L
Site Coolja	rloo
Truck DT103	3
Test: Untrea	ited
Record	Tonne km/ kg Fuel
1	31.0197
2	34.2956
3	33.9033
4	32.7783
5	33.6232
6	31.8565
7	32.5627
8	34.6538
9	35.3985
10	35.8222
11	34.8506
12	31.5843
13	34.5747
14	34.9733
15	33.7985
16	33.0599
17	33.3238
Mean	33.6517
Mean Std Dev	33.6517 1.372349789
Mean Std Dev Observations	33.6517 1.372349789 17
Mean Std Dev Observations	33.6517 1.372349789 17
Mean Std Dev Observations Test:	33.6517 1.372349789 17
Mean Std Dev Observations Test: Record	33.6517 1.372349789 17 Tonne km/ kg Fuel
Mean Std Dev Observations Test: Record	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214
Mean Std Dev Observations Test: Record 1 2	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924
Mean Std Dev Observations Test: Record 1 2 3	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748
Mean Std Dev Observations Test: Record 1 2 3 4	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326
Mean Std Dev Observations Test: Record 1 2 3 4 5	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082
Mean Std Dev Observations Test: Record 1 2 3 4 5 6	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9 10	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 7 8 9 10 11	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482 37.4901
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9 10 11 12	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482 37.4901 37.7196
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9 10 10 11 12 13	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482 37.4901 37.7196 36.7796
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9 10 10 11 12 13	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482 37.4901 37.7196 36.7796
Mean Std Dev Observations Test: Record 1 2 3 4 5 6 7 8 9 10 10 11 12 13	33.6517 1.372349789 17 Tonne km/ kg Fuel 34.9214 36.6924 35.7748 35.8326 36.4082 36.4181 36.0143 35.8366 35.8349 36.2482 37.4901 37.7196 36.7796

Mean Std Dev Observations	36.3054 0.750053402 13
	Tonne km/ kg Fuel
Mean % change	7.9%
Confidence Interval	99%
Alpha	0.005
Degrees Of Freedom	28
t Critical Value	2.76
Hypothesis	$H_0: u_1 - u_2 = 0$
	H <sub>1</sub> : u <sub>1</sub> - u <sub>2</sub> <>0
t=	-6.28

Conclusion:

Since t= -6.28, is outside the range +/- 2.76 we reject  $H_0$  and accept  $H_1$  and conclude that the difference between FTC treated and untreated test means are significant at a 99 % confidence level

Appendix "B"

**Test Worksheets**