



### Caterpillar 789 Haul Truck Final Drive : Camberwell Coal

#### Camberwell Coal

Camberwell Coal operates a fleet of Cat 789 Haul Trucks, four years ago they purchased a FM 1040T Finaldrive unit to start filtering their finaldrive and differential oils.

Now after this period of time they are starting to see the benefits and savings from implementing the FM 1040T as part of their maintenance practices.



Lubetech Pty Ltd

### Oil Analysis Report

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Client	Filter Technology Australia Pty Ltd / New South Wales		Site	Camberwell Coal
Contact	Philip Marheine		Unit ID/Name	Final Drive / CAT 789
Address			Manufacture/Model	Caterpillar / 789
Telephone	02 4932 9998		Origin	Differential
Fax	02 4932 9997		Fuel/Oil Type	Torque Fluid 464

**Diagnosis:**  
 36338=Non Filtered sample. 36339= 1 Hr of filtering using FTA filters. 36340= 2 Hrs of filtering using FTA filters.  
 36341= 3 Hrs of filtering using FTA filters. 36342= 4 Hrs of filtering using FTA filters.  
 36343= 5 Hrs of filtering using FTA filters.



Sample Number	36343	36342	36341	36340	36339	36338	Indicative Levels
Date	09/09/2002	08/09/2002	07/09/2002	06/09/2002	05/09/2002	04/09/2002	
Total Hours/Km	905	904	903	902	901	900	
Hours/Km on Oil	905	904	903	902	901	900	
Oil Changed	NO	NO	NO	NO	NO	NO	
Oil Added							
<b>Condition Tests</b>							
Fuel Dilution (%)							
WT Solids (%)							
Volume Water (%)	ND	ND	ND	ND	ND	ND	0.1
Water PPM							
Viscosity @ 40C (cST)	305	305	306	305	307	305	>10%
TAN (mg/KOH/g)	2.39	2.39	2.4	2.39	2.38	2.4	
TBN (mg/KOH/g)							
API							
PC90 Index							
<b>Wear Metals</b>							
Aluminum (Al)	1	1	1	1	1	2	30
Silicon (Si)	20	20	21	22	20	37	60
Tin (Sn)	<1	<1	<1	<1	<1	1	40
Iron (Fe)	10	10	12	12	10	31	300
Lead (Pb)	1	1	1	1	2	2	60
Copper (Cu)	5	5	5	5	5	7	60
Chromium (Cr)	<1	<1	<1	<1	<1	1	15
Sodium (Na)	4	4	4	4	3	11	80
Zinc (Zn)	1332	1280	1246	1282	1225	1260	
Others							
<b>Cleanliness</b>							
ISO4406	16/12	17/14	17/14	16/14	16/14	21/18	
Gravi-Metric							
>2 micron	733	2301	3313	3821	3844	34829	
>5 micron	271	851	1225	1415	1422	12882	
>15 micron	29	91	131	148	152	1377	
Contamination	Low	Moderate	Moderate	Moderate	Moderate	Elevated	
<b>DRP Ferrograph</b>							
Total Count							1000
Severity Index							116
Size Ratio							4
% Large Particles							800
<b>Wear Types</b>							
Rubbing							
Fatigue							
Laminar							
Sliding							
Cutting							
Dark/Red Oxide							
Non-Ferrous							
Dirt/Sludge							



#### Savings

Finaldrive oil life has been extended from 3000 to 10,000 hours across the 26 trucks, this is large reduction in new and waste oil entering and leaving site not to mention the dollars saved in handling this oil.

The oil after filtering through the FM 1040T returns to the finaldrive at ISO 15/12, 97 % cleaner than when it was drained in the FM 1040T for filtering.

ISO codes have dropped from ISO 23/20 to 20/18 or better after the truck has been in the service cycle, these samples are taken when the truck enters the workshop.

Life of the finaldrives is out to 20,500 hours up from 13,000 hours being the previous best achieved on site

**Oil life Extended from 3000 to 10,000 Hours**

**Finaldrive life extended 13,000 to 20,000 hours**