



Tribology Division

# INSPEC

UIN 041F97C

## Dual Fuel

**Unit No.** Toyota 86GTS

**Unit:**  
**Make** Toyota  
**Model** .  
**Serial No.**  
**Capacity** 5.4 Ltrs  
**Site**

**Compartment:**  
**Name** Dual Fuel  
**Make**  
**Model**  
**Serial No.**

**Customer:** E85 fuel only

## DIAGNOSIS

All wear levels within limits. Abrasive and other contaminant levels are acceptable. Please check recorded viscosity against requirements.

Action: As oil and filter(s) already changed, resample next recommended service interval to further monitor.  
Note: Fluid type stated as, Toyota TGMO - Synthetic 0w20 SN-GF5. Please provide sample of new product and TDS for reference purposes.

**ANALYST:** Antonio.Colangelo



Normal

### LEGEND



Severe



Abnormal



Caution



Normal

DATE SAMPLED	28-Oct-15	15-Sep-15	07-Aug-15	15-Nov-14
DATE RECEIVED	03-Nov-15	22-Sep-15	18-Aug-15	24-Nov-14
DATE REPORTED	05-Nov-15	24-Sep-15	20-Aug-15	26-Nov-14

SAMPLE NO.	10204046400	10204029432	10204013860	10203918372
TRACKING NUMBER	19935452	19087846	18913906	16433597
WORK ORDER NO.		K	K	K
COMPONENT	46223	44185	41676	32839
MACHINE	46223	44185	41676	32839
OIL	7047	5009	2500	
OIL MAKE	TOYOTA Synth	TOYOTA Synth	TOYOTA Synth	Nulon
OIL TYPE	0W20	0W20	0W20	Nulon Longlife
OIL GRADE				SAE 5W30
OIL ADDED	Ltrs	0.2		
FILTER				
OIL CHANGED	Changed	Not Changed	Not Changed	Not Changed

### Metals (ppm)

Iron (Fe)	4	4	4	5
Chromium (Cr)	<1	<1	<1	<1
Lead (Pb)	<1	<1	<1	1
Copper (Cu)	2	2	2	2
Tin (Sn)	1	1	<1	1
Nickel (Ni)	<1	<1	<1	<1
Aluminium (Al)	2	1	1	2
Titanium (Ti)	<1	<1	<1	<1
Silver (Ag)	<1	<1	<1	<1

### Contaminants and Additives (ppm)

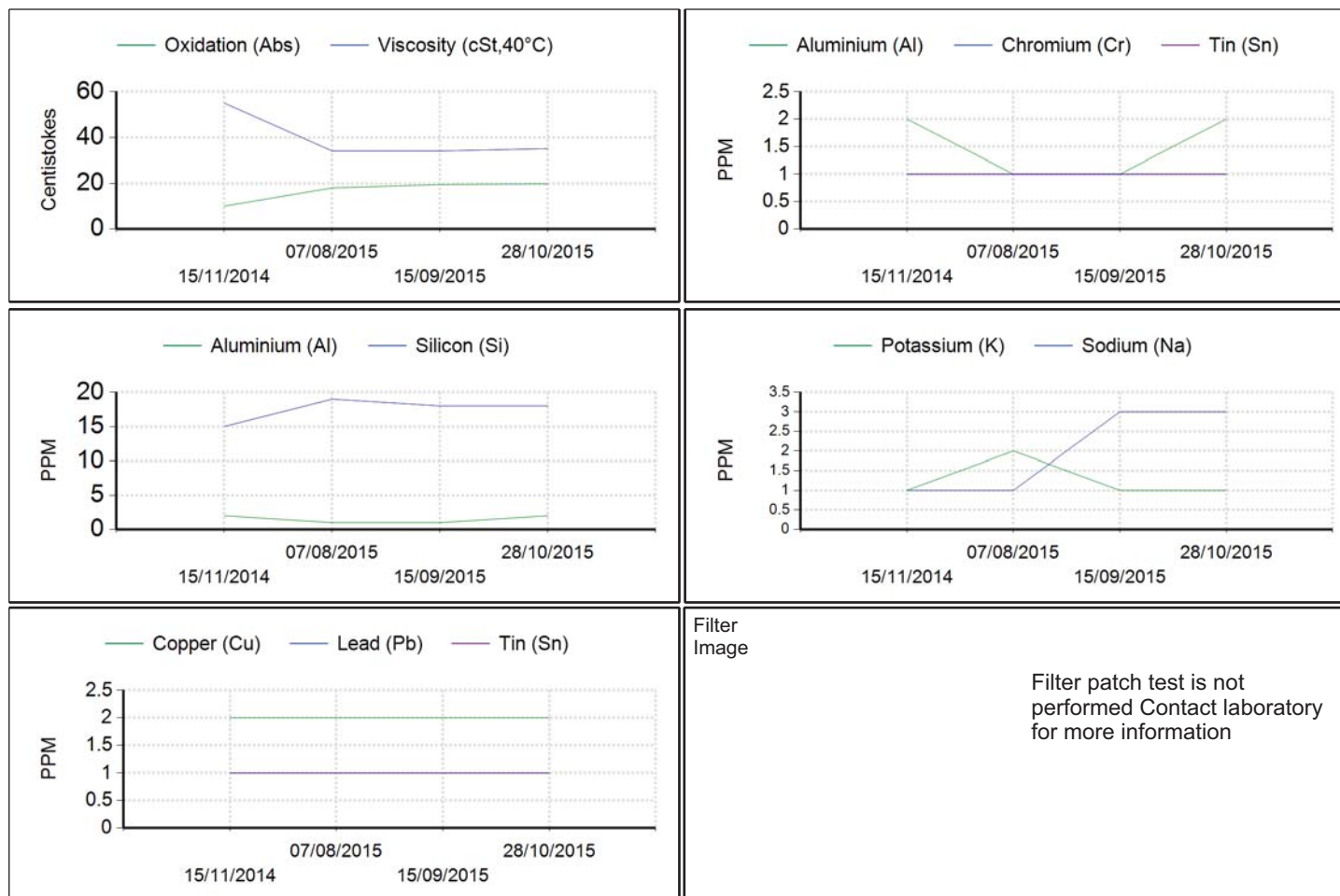
Silicon (Si)	18	18	19	15
Sodium (Na)	3	3	<1	1
Boron (B)	160	185	253	55
Calcium (Ca)	1900	2020	2313	2188
Zinc (Zn)	898	941	1088	877
Phosphorus (P)	695	763	853	691
Magnesium (Mg)	7	8	8	6
Molybdenum (Mo)	137	142	164	152
Barium (Ba)	<1	<1	<1	<1
Cadmium (Cd)	<1	<1	<1	<1
Vanadium (V)	<1	<1	<1	<1
Sulphur (S)	2321	2747	3067	2597
Antimony (Sb)	2	2	<1	1

### Physical Tests

Water (%)	<0.1	<0.1	<0.1	<0.1
Viscosity (cSt,40°C)	35	34	34	55
Viscosity (cSt,100°C)	7.3	7.4	7.4	9.2
Viscosity Index (ASTM D22)	180.0	193.0	193.0	150.0
Fuel (% by G.C.)	<0.1	<0.1	<0.1	<0.1
Dispersancy	Pass	Pass	Pass	Pass
Oxidation (Abs)	19.8	19.5	18.0	10.0
Nitration (Abs)	9.6	9.3	7.9	6.8
Total Base Number (FTIR)	7.9	8.0	8.8	4.8
PQ Index	11	21	27	19



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Since services are based on samples and information supplied by others, and since corrective actions, if any, are necessarily taken by others, these services are rendered without any warranty or liability of any kind beyond the actual amount paid to ALS Tribology for the services. Reported recommendations are based on interpretations of the generated test results and historical data. Certain test results appearing in this report may have been tested at other ALS laboratories within the Tribology divisional network.

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Sparks, Nevada

Europe  
Prague

#### Canada

Burlington, Ontario  
Edmonton, Alberta

#### Southeast Asia

Kuala Lumpur, Singapore

#### South America

Santiago de Chile

### TEST METHODS:

Acid Number:	ASTM D974/D664
Base Number:	ASTM D4739
Base Number (Perchloric):	ASTM D2896
Fuel Dilution by GC:	ASTM D3524/D7593
Fuel Dilution Visc/Setaflash	ASTM D445/D7279/D3828
Fuel Soot ATR/IR:	ASTM D7686
Glycol:	ASTM D2982
Metals by ICP AES:	ASTM D5185
Ox, NOx, SOx, FTIR:	ASTM D7418/D7414/D7415 D7624
Particle Count:	ASTM D7647 / ISO 11500, 4406
Viscosity:	ASTM D445 / D7279
Water KF:	ASTM E203 Mod / D6304C
Water Crackle:	In House