

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 225066

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

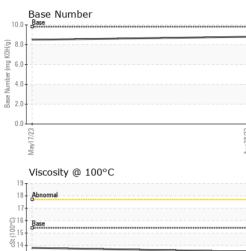
			May2023	Aug2023		
SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0080754	GFL0080740	
Sample Date		Client Info		28 Aug 2023	17 May 2023	
Machine Age	hrs	Client Info		600	600	
Oil Age	hrs	Client Info		600	600	
Oil Changed		Client Info		Not Changd	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINATI	ON	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Glycol		WC Method		NEG	NEG	
WEAR METALS	6	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	50	2	
Chromium	ppm	ASTM D5185m	>20	4	<1	
Nickel	ppm	ASTM D5185m	>4	0	<1	
Titanium	ppm	ASTM D5185m		<1	0	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	7	2	
Lead	ppm	ASTM D5185m	>40	1	0	
Copper	ppm	ASTM D5185m	>330	2	0	
Tin	ppm	ASTM D5185m	>15	<1	<1	
Vanadium	ppm	ASTM D5185m		0	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		and the second	11 11 11		1.1. A.	bistory 0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm		limit/base	current 2	history1 5	nistoryz
	ppm ppm					
Boron		ASTM D5185m	0	2	5	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	5 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 62	5 0 58	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 62 <1	5 0 58 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 62 <1 1054	5 0 58 <1 960	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 62 <1 1054 1163	5 0 58 <1 960 1082	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 62 <1 1054 1163 1099	5 0 58 <1 960 1082 1071	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	2 0 62 <1 1054 1163 1099 1363	5 0 58 <1 960 1082 1071 1314	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 62 <1 1054 1163 1099 1363 3887	5 0 58 <1 960 1082 1071 1314 3911	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 62 <1 1054 1163 1099 1363 3887 current	5 0 58 <1 960 1082 1071 1314 3911 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINANT Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5	5 0 58 <1 960 1082 1071 1314 3911 history1 3	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base	2 0 62 <1 1054 1163 1099 1363 3887 current 5 5 5 6	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5 5 6	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5 5 6 6	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2 history1	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5 5 6 <u>current</u> 0.7	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2 history1 0.2	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5 5 6 6 <u>current</u> 0.7 7.3 19.1	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2 history1 0.2 5.8	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 25 20 220 imit/base >3 >20 >3	2 0 62 <1 1054 1163 1099 1363 3887 <u>current</u> 5 5 6 6 <u>current</u> 0.7 7.3 19.1	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2 <u>history1</u> 0.2 5.8 18.6	 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 20 20 20 20 20 20 2	2 0 62 <1 1054 1163 1099 1363 3887 Current 5 5 5 6 Current 0.7 7.3 19.1	5 0 58 <1 960 1082 1071 1314 3911 history1 3 2 2 2 history1 0.2 5.8 18.6 history1	 history2 history2 history2 history2



13 Abnormal 12 11 May17/23

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	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Aug 28/23	Appearance	scalar	*Visual	NORML	NORML	NORML	
Aug2	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.8	
	GRAPHS						
	Ferrous Alloys						
	50 iron						
	40 - chromium		/				
	30- E	/					
	변 20						
	10						
	//23			3/23			
	/lay17			Aug28/23			
	Non-ferrous Meta	ls		4			
	10 T						
	copper						
	8 - exercise tin						
	6-						
	6 - W dd						
	6 Ed. 4						
	6 4 2						
	4						
	4 2 0						
	4	400446682 Have Anno A		g28/23			
	4 2 0 52/[]/eW			Aug28/23			
	4 2 0	C			Base Numbe	r	
	Viscosity @ 100°0				Base Numbe	r	
	Viscosity @ 100°0			10.0	Base	r	
	Viscosity @ 100°0	C		10.0	Base	r 	
	Viscosity @ 100°0			10.0		r	
	Viscosity @ 100°0			10.0		r	
	Viscosity @ 100°	C		10.0		r	
	Viscosity @ 100°	C		0.0 8.0 HOX Bu get		r	
	Viscosity @ 100°	C		10.0 (0,HO) B(0,) (0,HO) B(0,) (0,HO) B(0,) (0,HO) B(0,HO) (0,HO) B(0,HO) B(0,HO) (0,HO) B(0,HO) B(0,HO) (0,HO) B(0,HO) B(0,HO) B(0,HO) B(0,HO) (0,HO) B(0,HO) B(r	
	Viscosity @ 100°0 Piscosity @ 100°0 Base Abnormal Abnormal Abnormal	C		10.0 (0, HO) Bu	Base	r 	
	Viscosity @ 100°0 Piscosity @ 100°0 Base Abnormal Abnormal Abnormal	C		10.0 (0, HO) Bu	Base	r 	
	Viscosity @ 100° Viscosity @ 100° Abnormal Base Base CZULINEW Uiscosity @ 100° Base CZULINEW CZULINEW			10.0 8.0 10.0 KOH(0) 10.0 KOH(0) 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20	ESCICIÓN ESCICICON ESCICI		
Laboratory	Viscosity @ 100° boomal boomal boomal column colu	501 Madis		10.0 (0)HOJ Bul Jaquing 2.0 E0082Bing ry, NC 27513	ESCICIÓN ESCICICON ESCICI	:FL Environmen	tal - 455 - Fliı
Sample No.	Viscosity @ 100°C Viscosity @ 100°C Abnormal Base CULINAW Uiscosity @ 100°C CULINAW Uiscosity @ 100°C CULINAW CULINA CULIN	501 Madia	d :01 \$	10.0 (0)HOX Bull Jaquing 4.0 (0)HOX Bull Jaquing 4.0 (ESCICIÓN ESCICICON ESCICI	FL Environmen 205	tal - 455 - Fli i 51 W. Bristol F
Sample No. Lab Number	Viscosity @ 100°0 Viscosity @ 100°0 become	501 Madia Received Diagnos	d :01 \$ ed :01 \$	10.0 (0)HOJ Bul Jaquing 4.0 (0)HOJ Bul Jaquing 4.0 (0)HOJ Bul Jaquing 4.0 (0) (0)HOJ Bul Jaquing 4.0 (0) (0)HOJ Bul Jaquing 4.0 (0)HOJ Bu	ESCITIVE M	FL Environmen 205	t al - 455 - Fli 51 W. Bristol F nt Township, M
Sample No. Lab Number Unique Number	Viscosity @ 100°0 Viscosity @ 100°0 Base Abnomal Abnomal Control 12 Sector 12 Sec	501 Madia	d :01 \$ ed :01 \$	10.0 (0)HOX Bull Jaquing 4.0 (0)HOX Bull Jaquing 4.0 (ESCITIVE M	FL Environmen 205 Flir	t al - 455 - Flir i1 W. Bristol R nt Township, N US 4850
Sample No. Lab Number	Viscosity @ 100°0 Viscosity @ 100°0 Base Control 10 Control 10 Con	501 Madia Received Diagnost	d :01 \$ ed :01 \$ tician :We	10.0 (0)(HO) Bull Jaquing 4.0 (0)(HO) Bull	ESCITIVE M	FL Environmen 205 Flir Contact: M	tal - 455 - Flin 1 W. Bristol R 1 Township, N US 4850 ARK WOMBL ble@gflenv.co

Submitted By: MARK WOMBLE

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