

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 4519M Component Diesel Engine

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

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

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.

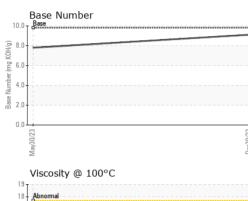
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2					
Sample Number		Client Info		GFL0105874	GFL0069850						
Sample Date		Client Info		20 Dec 2023	30 May 2023						
Machine Age	hrs	Client Info		26560	3544						
Oil Age	hrs	Client Info		26560	600						
Oil Changed		Client Info		Not Changd	Changed						
Sample Status				NORMAL	MARGINAL						
CONTAMINAT	ION	method	limit/base	current	history1	history2					
Fuel		WC Method	>5	<1.0	3 .9						
Water		WC Method	>0.2	NEG	NEG						
Glycol		WC Method		NEG	NEG						
WEAR METALS method limit/base current history1 history2											
Iron	ppm	ASTM D5185m	>80	0	15						
Chromium	ppm	ASTM D5185m	>5	0	1						
Nickel	ppm	ASTM D5185m	>2	<1	0						
Titanium	ppm	ASTM D5185m		0	0						
Silver	ppm	ASTM D5185m	>3	0	0						
Aluminum	ppm	ASTM D5185m	>30	<1	2						
Lead	ppm	ASTM D5185m	>30	0	0						
Copper	ppm	ASTM D5185m	>150	<1	<1						
Tin	ppm	ASTM D5185m	>5	0	0						
Vanadium	ppm	ASTM D5185m		0	0						
Cadmium	ppm	ASTM D5185m		0	0						
				•	-						
ADDITIVES		method	limit/base	current	history1	history2					
ADDITIVES Boron	ppm		limit/base		-	history2					
		method		current	history1	history2 					
Boron	ppm	method ASTM D5185m	0	current 4	history1 1						
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 4 0	history1 1 0						
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 4 0 59	history1 1 0 51						
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 4 0 59 <1	history1 1 0 51 <1						
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 4 0 59 <1 950	history1 1 0 51 <1 816						
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 4 0 59 <1 950 1033	history1 1 0 51 <1 816 978	 					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 4 0 59 <1 950 1033 1122	history1 1 0 51 <1 816 978 897	 					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 4 0 59 <1 950 1033 1122 1284	history1 1 0 51 <1 816 978 897 1148						
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 4 0 59 <1 950 1033 1122 1284 3257	history1 1 0 51 <1 816 978 897 1148 3184						
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 4 0 59 <1 950 1033 1122 1284 3257 Current	history1 1 0 51 <1 816 978 897 1148 3184 history1	 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5	history1 1 0 51 <1 816 978 897 1148 3184 history1 4	 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 2 <1	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9	 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 2 <1	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9 3	 history2 					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >20 Imit/base	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 <1 2 <1	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9 3 history1	 history2 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 220 220 220	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 <1 2 <1 0	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9 3 history1 0.7	 history2 history2 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 220 20 20 20 20 20 20 20 20 20 20 20 2	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 <1 5 2 <1 Current 0 0 4.2	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9 3 history1 0.7 8.4	 history2 history2					
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3 >30	Current 4 0 59 <1 950 1033 1122 1284 3257 Current 5 2 <1 5 2 <1 0 0 4.2 17.1	history1 1 0 51 <1 816 978 897 1148 3184 history1 4 9 3 history1 0.7 8.4 20.7	 history2 history2 history2					



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OIL ANALYSIS REPORT

VISUAL



		VISUAL		method	11111/0430	Current	matory	matoryz
		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		*Visual	NONE	NONE		
			scalar				NONE	
		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
	Dec20/23	Appearance	scalar	*Visual	NORML	NORML	NORML	
	De	Odor	scalar	*Visual	NORML	NORML	NORML	
°C		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	
		FLUID PROPE	RTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		14.7	12.3	
		GRAPHS						
		Ferrous Alloys						
		16 iron						
		4 - chromium						
		12 - minister mickel						
		10						
		E 8						
		6						
		4						
		123			123			
		flay30/23			Dec20/23			
		Non-ferrous Metals	-					
		¹⁰ T	, 					
		copper						
		8 - exercise tin						
		6						
		ш dd						
		4						
		2						
		0			53			
		y30/23			Dec20/23			
		N an			De			
		Viscosity @ 100°C				Base Number		
					10	0 Base	*****	
		18 Abnormal			- 8	0		
					B/H0			
		Base			y Bu	.0		
		0 16 Base 15 15 14			Base Number (mg KOH/g)			
					se Nu			
		Abnormal			2 ²⁰	.0-		
		12			0			
								1/23 -
		May30/23			Dec20/23	May30/23		Dec20/23
								
	Laboratory	: WearCheck USA - 5	01 Madi: Recieve o		ry, NC 2751 Dec 2023	3 GFL Envi	ronmental - 415	- Michigan East
	Sample No. Lab Number		iagnos		Dec 2023 Dec 2023		Ster	6200 Elmridge ling Heights, MI
ISO/ICC (7025	Jnique Number		Diagnos		s Davis		0.01	US 48313
	Fest Package							ct: Frank Wolak
To discuss this s	ample report,	contact Customer Servi						ak@gflenv.com
		are outside of the ISO 1					T:	(586)825-9514
Statements of cor	ntormity to spec	cifications are based on th	e simple	acceptance o	aecision rule	(JCGM 106:2012)		F:

Submitted By: Frank Wolak Page 2 of 2