

OIL ANALYSIS REPORT

Sample Rating Trend





913073 Component Diesel Engine Fluid

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

					OctŽ023 JanŽ024 MarŽ024			
	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
	Sample Number		Client Info		GFL0092548	GFL0100403	GFL0092512	
tor.	Sample Date		Client Info		27 Mar 2024	18 Jan 2024	03 Oct 2023	
	Machine Age	hrs	Client Info		3156	2754	2145	
	Oil Age	hrs	Client Info		402	609	451	
	Oil Changed		Client Info		Changed	Changed	Not Changd	
the	Sample Status				NORMAL	NORMAL	NORMAL	
	CONTAMINAT	ION	method	limit/base	current	history1	history2	
	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
the	Water		WC Method	>0.2	NEG	NEG	NEG	
	Glycol		WC Method		NEG	NEG	NEG	
	WEAR METAL	S	method	limit/base	current	history1	history2	
	Iron	ppm	ASTM D5185m	>120	8	12	10	
	Chromium	ppm	ASTM D5185m	>20	0	<1	<1	
	Nickel	ppm	ASTM D5185m	>5	2	3	2	
	Titanium	ppm	ASTM D5185m	>2	0	0	0	
	Silver	ppm	ASTM D5185m	>2	0	0	<1	
	Aluminum	ppm	ASTM D5185m	>20	1	1	2	
	Lead	ppm	ASTM D5185m		0	0	1	
	Copper	ppm	ASTM D5185m	>330	<1	1	4	
	Tin	ppm	ASTM D5185m		<1	<1	2	
	Vanadium	ppm	ASTM D5185m		0	<1	0	
	Cadmium	ppm	ASTM D5185m		0	0	0	
	ADDITIVES		method	limit/base	current	history1	history2	
	Boron	ppm	ASTM D5185m	0	7	<1	3	
	Barium	ppm	ASTM D5185m	0	0	0	0	
	Molybdenum	ppm	ASTM D5185m	60	59	55	62	
	Manganese	ppm	ASTM D5185m	0	<1	<1	<1	
	Magnesium	ppm	ASTM D5185m	1010	957	943	1024	
	Calcium	ppm	ASTM D5185m	1070	1084	1000	1083	
	Phosphorus	ppm	ASTM D5185m	1150	1063	1025	1083	
	Zinc	ppm	ASTM D5185m		1255	1182	1340	
	Sulfur	ppm	ASTM D5185m		3431	2789	3094	
	Sulfur CONTAMINAN		ASTM D5185m method				3094 history2	
				2060 limit/base	3431	2789		
	CONTAMINAN	TS	method	2060 limit/base	3431 current	2789 history1	history2	
	CONTAMINAN Silicon	TS ppm	method ASTM D5185m	2060 limit/base >25	3431 current 3	2789 history1 3	history2 4	
	CONTAMINAN Silicon Sodium	TS ppm ppm	method ASTM D5185m ASTM D5185m	2060 limit/base >25	3431 current 3 3	2789 history1 3 3	history2 4 3	
	CONTAMINAN Silicon Sodium Potassium	TS ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m method	2060 limit/base >25 >20	3431 current 3 3 0	2789 history1 3 3 2	history2 4 3 3	
	CONTAMINAN Silicon Sodium Potassium INFRA-RED	TS ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m method	2060 limit/base >25 >20 limit/base >4	3431 current 3 3 0 current	2789 history1 3 3 2 history1 0.7	history2 4 3 3 history2	
	CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	TS ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	2060 limit/base >25 >20 limit/base >4 >20	3431 current 3 3 0 current 0.5	2789 history1 3 3 2 history1	history2 4 3 3 history2 0.5	
	CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	TS ppm ppm ppm % Abs/cm Abs/.1mm	method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624	2060 limit/base >25 >20 limit/base >4 >20	3431 current 3 3 0 current 0.5 7.6	2789 history1 3 3 2 history1 0.7 9.0	history2 4 3 3 history2 0.5 7.7	
	CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	TS ppm ppm ppm % Abs/cm Abs/.1mm	method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624 Method	2060 limit/base >25 >20 limit/base >4 >20 >30	3431 current 3 3 0 current 0.5 7.6 19.5	2789 history1 3 3 2 history1 0.7 9.0 20.1	history2 4 3 3 history2 0.5 7.7 19.3	

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Machine Id

Wear

All component wear rates are normal.

Contamination

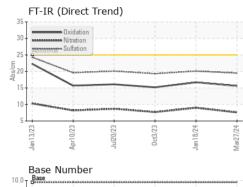
There is no indication of any contamination in the oil.

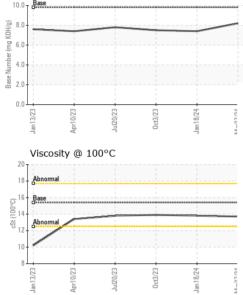
Fluid Condition

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



OIL ANALYSIS REPORT





d)		VISUAL		method	limit/base	current	history1	history2	
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
	and the state of t	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
		Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
		Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
Constantion of the state of the		Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
0ct3/23	Jan 18/24 Mar27/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
0ct3/23	Jan Mar	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	-	Free Water	scalar	*Visual		NEG	NEG	NEG	
		FLUID PROPI	ERTIES	method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.8	13.9	
		GRAPHS							
		Ferrous Alloys							
23 -	24 -	iron							
0ct3/23	Jan 18/24	50- chromium							
		40							
		툍 30							
		20							
1									
		10							
			23	24	5				
		Jan 13/23 Apr1 0/23	Jul20/23 0ct3/23	Jan 18/24	Mar27/24				
				ŗ	≥				
- 23	- 724 -	Non-ferrous Meta	ais						
0ct3/23	han 18/24 and 18/24 and 18/24	copper							
	× =	80 - management tin							
		60	1						
		40							
		20							
		53 53	23	24	24				
		lan 13/23 Apr 1 0/23	Jul20/23 0ct3/23	lan 1 8/2 4	1ar27/24				
		Viscosity @ 100°	C	7	2	De la Numbra			
		19 18 Abnormal		1	10.0	Base Number			
		17-			~ 8.0				
		16 - Base			IB/HO				
		© 15			E 6.0	•			
		な15 0014 変13 Abnormal			0.6.0 0.6.0 Base Number (mg KOH/0) 4.0				
		12			N se N				
		11			⁶⁶ 2.0	•			
		10	1		0.0				
		3/23	Jul20/23 - Oct3/23 -	8/24 -		3/23	Ju(20/23 + 0ct3/23 +	8/24 -	
		Jan 13/23 Apr 1 0/23	Jul20/23 0ct3/23	Jan 18/24	Mar27/24	Jan 13/23 Apr 1 0/23	Jui20/23 0ct3/23	Jan18/24	
b.	l aboratory	WoorChook USA 5	O1 Madias						
	Laboratory Sample No.	: WearCheck USA - 5 : GFL0092548				GFL En			
	Laboratory Sample No. Lab Number	: GFL0092548	01 Madisor Receiv Testeo	ved : 03	, NC 27513 8 Apr 2024 9 Apr 2024	GFL En		0 Alder Avenu	
	Sample No.	: GFL0092548 : <mark>06137891</mark> : 10962699	Receiv	ved : 03 d : 04	8 Apr 2024		25	935 - Omro Ho 0 Alder Avenu Omro, W US 5496 act: Tim Kieffe	

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: Seel also GFL947 - Tim Kieffer Page 2 of 2

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