

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 527043

Component Diesel Engine

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Sample only) $% \label{eq:comment}$

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

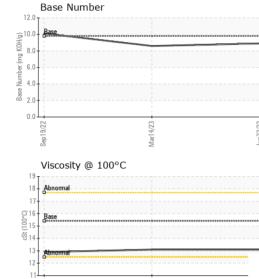
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Sep		Mar2023 Jun20		
SAMPLE INFORM	IATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0077522	GFL0067587	GFL0055910
Sample Date		Client Info		23 Jun 2023	14 Mar 2023	19 Sep 2022
Machine Age	hrs	Client Info		18606	18412	18098
Oil Age	hrs	Client Info		194	597	600
Oil Changed		Client Info		Not Changd	N/A	Changed
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	6	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>100	17	12	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	1	3
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	84	<u> </u>	6
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	0	34	67	85
Barium	ppm	ASTM D5185m	0	0	0	2
				52		10
Molybdenum	ppm	ASTM D5185m	60	52	15	16
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	60 0	<1	15 <1	<1
				-		
Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m	0 1010	<1 950	<1 616	<1 565
Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070	<1 950 1113	<1 616 1249	<1 565 1336
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150	<1 950 1113 986	<1 616 1249 678	<1 565 1336 673
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270	<1 950 1113 986 1238	<1 616 1249 678 745	<1 565 1336 673 788
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060	<1 950 1113 986 1238 3644	<1 616 1249 678 745 3302	<1 565 1336 673 788 3219
Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	<1 950 1113 986 1238 3644 current	<1 616 1249 678 745 3302 history 1	<1 565 1336 673 788 3219
Magnese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base	<1 950 1113 986 1238 3644 current 3	<1 616 1249 678 745 3302 history 1 6	<1 565 1336 673 788 3219 history 2 7
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN ^T Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25	<1 950 1113 986 1238 3644 current 3 <1	<1 616 1249 678 745 3302 history 1 6 6	<1 565 1336 673 788 3219 history 2 7 1
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 limit/base >25 >20	<1 950 1113 986 1238 3644 current 3 <1 2	<1 616 1249 678 745 3302 history 1 6 6 3	<1 565 1336 673 788 3219 history 2 7 1 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm rS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20	<1 950 1113 986 1238 3644 current 3 <1 2 current	<1 616 1249 678 745 3302 history 1 6 6 3 3 history 1	<1 565 1336 673 788 3219 history 2 7 1 2 history 2 history 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3	<1 950 11113 986 1238 3644 current 3 <1 2 current 0.3	<1 616 1249 678 745 3302 history 1 6 6 6 3 3 history 1 0.2	<1 565 1336 673 788 3219 history 2 7 1 2 history 2 0.1
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 1010 1070 1150 1270 2060 <i>limit/base</i> >20 <i>limit/base</i> >3 >20	<1 950 1113 986 1238 3644 <u>current</u> 3 <1 2 <u>current</u> 0.3 8.1	<1 616 1249 678 745 3302 history 1 6 6 6 3 3 history 1 0.2 8.5	<1 565 1336 673 788 3219 history 2 7 1 2 history 2 0.1 6.8
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	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20 >30 imit/base	<1 950 1113 986 1238 3644 <u>current</u> 3 <1 2 <u>current</u> 0.3 8.1 20.1	<1 616 1249 678 745 3302 history 1 6 6 6 3 history 1 0.2 8.5 19.3	<1 565 1336 673 788 3219 history 2 7 1 2 history 2 0.1 6.8 20.3



Sep19/22

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	VISUAL		method		current	history 1	history 2
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
4/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar ¹ 4/23 Jun23/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPE	RTIES	method	limit/base	current	history 1	history 2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.1	13.1	12.9
	GRAPHS						
	Ferrous Alloys						
4/23	16 - iron			and the second se			
Mar14,/23	14 nickel	/					
	u 10	/					
	4						
	2						
	Sep 19/22	Mar14/23 -		Jun23/23 -			
		_		Junz			
	Non-ferrous Meta	ls					
	copper	~					
	200 - tin	/ \					
	= 150-						
	Ed 100						
	50						
	50						
	0	4/23		3/23			
	Sep19/22	Mar14/23		Jun23/23			
	0	2		<u> </u>	Base Number		
	Viscosity @ 100°0	2		12.0	Rase		
	Viscosity @ 100°0	2		12.0	Base		
	Viscosity @ 100°0	2		12.0	Base		
	Viscosity @ 100°(2		12.0	- Base		
	Viscosity @ 100°0	2		12.0	- Base		
	Viscosity @ 100°0	2		12.0 (D)HO 8.0 (D)HO 8.0 () - Base		
	Viscosity @ 100° Abnormal	c		12.0 (0)HOX Bu HOX BU H			2
	Viscosity @ 100° ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁹ ¹⁰ ¹⁹ ¹⁰ ¹⁹ ¹⁹ ¹⁰ ¹⁰ ¹⁹ ¹⁰ ¹¹ ¹⁰ ¹¹	2		12.0 (DH) HOX Bull aquin V eeg 2.0		Mart 4/23	
Laboratory Sample No. Lab Number Unique Number Unique Number Test Package	Viscosity @ 100° Viscosity @ 100° Abnormal Abnormal Abnormal Abnormal Control (Control	501 Madia Received Diagnost	d : 27 . ed : 30 . tician : Dor	ry, NC 27513 Jun 2023 a Baldridge	Sep 19/22	ronmental - 625 - 4102 Contact: 0	Harrison Haulir Industrial Pkw Harrison, M US 4862 Glenda Stande
Laboratory Sample No. Lab Number Unique Number	Viscosity @ 100%	501 Madia Received Diagnost vice at 1-8	d : 27 d ed : 30 d tician : Dor 800-237-1369	ry, NC 27513 Jun 2023 Baldridge	Sep 19/22	ronmental - 625 - 4102 Contact: 0	Harrison Haulir Industrial Pkw Harrison, N US 4862

Submitted By: also GFL632 and GFL638 - Glenda Standen