

OIL ANALYSIS REPORT

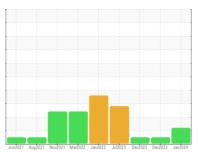
Sample Rating Trend

GLYCOL



Machine Id 546M Component **Diesel Engine**

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





DIAGNOSIS

Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

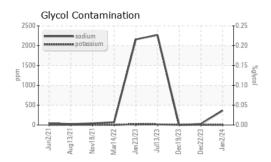
Fluid Condition

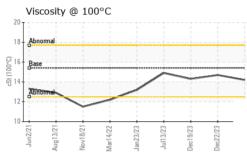
The BN result indicates that there is suitable alkalinity remaining in the oil.

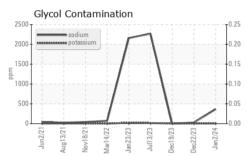
Company Comp	N SHP 15W40 (- GAL)	Jun2021 Au	g2021 Nov2021 Mar2022	Jan2023 Jul2023 Dec2023 Dec20	23 Jan2024	
Company Comp	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 18449 18465 18465 18173 1	Sample Number		Client Info		GFL0108817	GFL0105842	GFL0105734
Dil Age	Sample Date		Client Info		02 Jan 2024	22 Dec 2023	19 Dec 2023
Critical Changed Critical Changed Changed Changed ABNORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		18449	18465	18465
ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		18465	18173	18173
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Not Changd
Wester Wc Method Sa.0 Cal.0 Cal.0 Cal.0 NEG	Sample Status				ABNORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >90 14 2 4 Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Acad ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >40 0 0 0 Copper ppm ASTM D5185m 0 0 0 0 Calcum ppm ASTM D5185m 0 0 0 0 Calcum ppm ASTM D5185m 0 0 0 0	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 ron ppm ASTM D5185m >90 14 2 4 Chromium ppm ASTM D5185m >20 <1	-uel		WC Method	>3.0	<1.0	<1.0	<1.0
Port	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
ASTM D5185m >2	ron	ppm	ASTM D5185m	>90	14	2	4
Description	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Ast Ast	Γitanium	ppm	ASTM D5185m	>2	0	0	0
December December	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>20	1	2	2
Acade Aca	_ead	ppm	ASTM D5185m	>40	0	0	0
Anadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 2 18 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 hi	Copper	ppm	ASTM D5185m	>330	0	0	12
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 2 18 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 71 58 61 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current <t< td=""><td>Γin</td><td>ppm</td><td>ASTM D5185m</td><td>>15</td><td>0</td><td>0</td><td>0</td></t<>	Γin	ppm	ASTM D5185m	>15	0	0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 6 2 18 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 0 Manganesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Pince ppm ASTM D5185m 1270 1268 1159 1114 Bulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Bodium ppm ASTM D5185m >20 </td <td>/anadium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>0</td>	/anadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Sarium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 71 58 61 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 9 Godium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 NEG NEG INFRA-RED method limi	Boron	ppm	ASTM D5185m	0	6	2	18
Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Golium ppm ASTM D5185m >25 9 4 9 Golium ppm ASTM D5185m >20 4 2 1 Glicon ppm ASTM D5185m >20 4 2 1 Glicon ppm ASTM D5185m >20 4 2 1 Glycol *ASTM D5185m >20 <	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 966 892 875 Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Gulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current history1 history2 CONTAMINANTS method limit/base current history1 history2 Soliticon ppm ASTM D5185m >25 9 4 9 Soliticon ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185	Molybdenum	ppm	ASTM D5185m	60	71	58	61
Calcium ppm ASTM D5185m 1070 1049 997 985 Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Gilicon ppm ASTM D5185m >25 9 4 9 Sodium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 NEG NEG NEG INFRA-RED method limit/base c	Manganese	ppm	ASTM D5185m	0	0	0	0
Phosphorus ppm ASTM D5185m 1150 1015 935 832 Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 9 Sodium ppm ASTM D5185m >20 4 2 1 Goldssium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 MFRA NEG NEG NEG NEG <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <td>966</td> <td>892</td> <td>875</td>	Magnesium	ppm	ASTM D5185m	1010	966	892	875
Zinc ppm ASTM D5185m 1270 1268 1159 1114 Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 9 Sodium ppm ASTM D5185m >20 4 2 1 Golycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 MEG NEG NEG NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.1	Calcium	ppm	ASTM D5185m	1070	1049	997	985
Sulfur ppm ASTM D5185m 2060 3236 3204 2793 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 9 Sodium ppm ASTM D5185m >20 4 2 1 Potassium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Blycol % *ASTM D5185m >20 4 2 1 Blycol % *ASTM D5185m >20 4 2 1 Blycol % *ASTM D5185m >20 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.1 0.1 Nitration Abs/.1mm *ASTM D7415 >30 19.6 <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1150</td> <td>1015</td> <td>935</td> <td>832</td>	Phosphorus	ppm	ASTM D5185m	1150	1015	935	832
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 4 9 Sodium ppm ASTM D5185m ▲ 361 29 0 Potassium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 4 2 1 Glycol % *ASTM D5185m >20 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 4.3 4.5 Sulfation Abs/.1mm *ASTM D7415 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current	Zinc	ppm	ASTM D5185m	1270	1268	1159	1114
Solition ppm ASTM D5185m >25 9 4 9	Sulfur	ppm	ASTM D5185m	2060	3236	3204	2793
Sodium ppm ASTM D5185m ▲ 361 29 0 Potassium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 7.5 4.3 4.5 Sulfation Abs/.1mm *ASTM D7415 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 12.5 13.3	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 2 1 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.7 0.1 0.1 Vitration Abs/cm *ASTM D7624 >20 7.5 4.3 4.5 Sulfation Abs/.1mm *ASTM D7415 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 12.5 13.3	Silicon	ppm	ASTM D5185m	>25	9	4	9
NEG NEG	Sodium	ppm	ASTM D5185m		<u>▲</u> 361	29	0
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	4	2	1
Soot % % *ASTM D7844 > 6 0.7 0.1 0.1 Nitration Abs/cm *ASTM D7624 > 20 7.5 4.3 4.5 Sulfation Abs/.1mm *ASTM D7415 > 30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 14.9 12.5 13.3	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 7.5 4.3 4.5 Sulfation Abs/.1mm *ASTM D7615 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 14.9 12.5 13.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 14.9 12.5 13.3	Soot %	%	*ASTM D7844	>6	0.7	0.1	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 19.6 17.3 17.8 FLUID DEGRADATION method limit/base current history1 history2 Dxidation Abs/.1mm *ASTM D7414 >25 14.9 12.5 13.3							
Oxidation							
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.9	12.5	13.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	9.9	9.4	9.3



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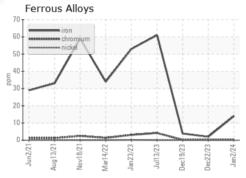


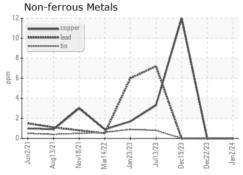


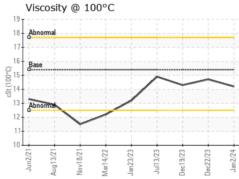
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

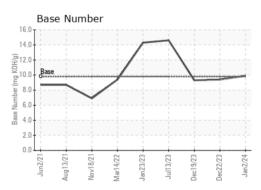
FLUID FROF	LHILS	memou	IIIIII/Dase	Current	HISTOLAL	HISTOLY
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.7	14.3

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0108817

: 06051770

Diagnosed : 10817719

Recieved

: 08 Jan 2024 : Jonathan Hester Diagnostician

: 05 Jan 2024

Test Package : FLEET (Additional Tests: Glycol)

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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