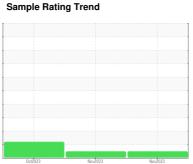


OIL ANALYSIS REPORT

T Sam









Machine Id 834052 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

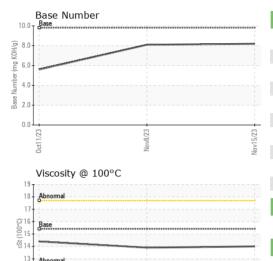
Fluid Condition

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

Sample Number Client Info GFL0099888 GFL0095186 GFL0095186	N SHP 15W40 (- GAL)	00	12023	Nov2023 Nov20	23	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info	Sample Number		Client Info		GFL0099888	GFL0095186	GFL0095143
Dil Changed hrs	Sample Date		Client Info		15 Nov 2023	08 Nov 2023	11 Oct 2023
Dil Changed Cilient Info Not Changd Not Changed NoRMAL NORMAL NORMAL ABNORMA	Machine Age	hrs	Client Info		472	227	55
CONTAMINATION method limit/base current history1 history2 history3 history3 history3 history4 history4 history4 history4 history5 hist	Oil Age	hrs	Client Info		0	0	0
CONTAMINATION	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Water	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Vonn ppm ASTM D5185m >120 7 44 32 Chromium ppm ASTM D5185m >20 <1 <1 1 Nickel ppm ASTM D5185m >5 0 1 <1 1 Silver ppm ASTM D5185m >2 0 <1 <1 1 Silver ppm ASTM D5185m >2 0 <1 <1 Silver ppm ASTM D5185m >2 0 <1 <1 <1 Silver ppm ASTM D5185m >20 2 2 17 <4 Aluminum ppm ASTM D5185m >20 0 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20	WEAR METAL	S	method	limit/base	current	history1	history2
Silver	ron	ppm	ASTM D5185m	>120	7	44	32
Description	Chromium	ppm	ASTM D5185m	>20		<1	1
Silver	Nickel	ppm	ASTM D5185m	>5		1	<1
Aluminum ppm ASTM D5185m > 20 2 2 17 Lead ppm ASTM D5185m > 40 0 1	Titanium	ppm	ASTM D5185m	>2	0	<1	<1
Lead ppm ASTM D5185m >40 0 1 <1 Copper ppm ASTM D5185m >330 1 18 12 Fin ppm ASTM D5185m >15 <1 1 <1 Vanadium ppm ASTM D5185m <1 <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 <1 0 ADDITIVES method limit/base current history history Boron ppm ASTM D5185m 0 4 27 18 Boron ppm ASTM D5185m 0 4 27 18 Boron ppm ASTM D5185m 0 0 5 0 Molybdenum ppm ASTM D5185m 0 4 49 46 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 </td <td>Silver</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <td></td> <td></td> <td></td>	Silver	ppm	ASTM D5185m	>2			
Copper	Aluminum	ppm	ASTM D5185m	>20	2		17
Fin	_ead	ppm					<1
Anadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 0 4 27 18 Barium ppm ASTM D5185m 0 0 5 0 Wolybdenum ppm ASTM D5185m 0 61 49 46 Manganese ppm ASTM D5185m 0 <1 16 10 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1	• •	ppm	ASTM D5185m	>330	1		12
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 27 18 Barium ppm ASTM D5185m 0 0 5 0 Molybdenum ppm ASTM D5185m 0 61 49 46 Manganese ppm ASTM D5185m 0 <1 16 10 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m 225 4 <td></td> <td>ppm</td> <td></td> <td>>15</td> <td></td> <td></td> <td></td>		ppm		>15			
ADDITIVES method limit/base current history1 history Boron ppm ASTM D5185m 0 4 27 18 Barium ppm ASTM D5185m 0 0 5 0 Molybdenum ppm ASTM D5185m 60 61 49 46 Manganese ppm ASTM D5185m 0 <1 16 10 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Bulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history Solicon ppm ASTM D5185m 225 4 37 29 Bodium ppm ASTM D5185m 20 77 3 △ 75 INFRA-RED method limit/base current history1 history Soot % % "ASTM D7844 >4 0.2 0 0 Nitration Abs/.1mm "ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm "ASTM D7415 >30 19.3 20.2 23.5	√anadium	ppm	ASTM D5185m				
Boron ppm ASTM D5185m 0 0 0 5 0 0 0 0 0 0		ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 0 5 0 Molybdenum ppm ASTM D5185m 60 61 49 46 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 61 49 46 Manganese ppm ASTM D5185m 0 <1 16 10 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m >20 7 3 75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7624 </td <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>4</td> <td>27</td> <td>18</td>	Boron	ppm	ASTM D5185m	0	4	27	18
Manganese ppm ASTM D5185m 0 <1 16 10 Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m 39 <1 3 75 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7815<	Barium	ppm	ASTM D5185m	0	0	5	0
Magnesium ppm ASTM D5185m 1010 968 728 649 Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m >20 7 3 75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/.1mm *ASTM D7845 >20 7.7 9.3 9.4 Sulfation Abs/.1mm	Molybdenum	ppm	ASTM D5185m	60	61	49	46
Calcium ppm ASTM D5185m 1070 1090 1146 1000 Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m >20 7 3 ^75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm	Manganese	ppm	ASTM D5185m	0	<1	16	10
Phosphorus ppm ASTM D5185m 1150 1063 725 618 Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 4 37 29 Godium ppm ASTM D5185m 39 <1	Magnesium	ppm	ASTM D5185m	1010	968	728	649
Zinc ppm ASTM D5185m 1270 1290 852 750 Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m 39 <1 3 Potassium ppm ASTM D5185m >20 7 3 ▲ 75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm <t< td=""><td>Calcium</td><td>ppm</td><td>ASTM D5185m</td><td>1070</td><td>1090</td><td>1146</td><td>1000</td></t<>	Calcium	ppm	ASTM D5185m	1070	1090	1146	1000
Sulfur ppm ASTM D5185m 2060 3166 2592 1923 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m 39 <1	Phosphorus	ppm	ASTM D5185m	1150	1063	725	618
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m 39 <1	Zinc	ppm	ASTM D5185m	1270	1290	852	750
Silicon ppm ASTM D5185m >25 4 37 29 Sodium ppm ASTM D5185m 39 <1 3 Potassium ppm ASTM D5185m >20 7 3 ▲ 75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	Sulfur	ppm	ASTM D5185m	2060	3166	2592	1923
Sodium ppm ASTM D5185m 39 <1 3 Potassium ppm ASTM D5185m >20 7 3 ▲ 75 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 7 3 ▲ 75 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	Silicon	ppm	ASTM D5185m	>25	4	37	29
INFRA-RED	Sodium	ppm	ASTM D5185m		39	<1	3
Soot % % *ASTM D7844 >4 0.2 0 0 Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	Potassium	ppm	ASTM D5185m	>20	7	3	<u>^</u> 75
Nitration Abs/cm *ASTM D7624 >20 7.7 9.3 9.4 Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.3 20.2 23.5 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	Soot %	%	*ASTM D7844	>4	0.2	0	0
FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 15.9 18.2 22.5	Nitration	Abs/cm	*ASTM D7624	>20	7.7	9.3	9.4
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.3	20.2	23.5
	FLUID DEGRAI	NOITAC	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.2 8.1 5.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.9	18.2	22.5
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.2	8.1	5.6



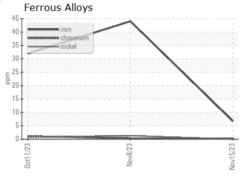
OIL ANALYSIS REPORT

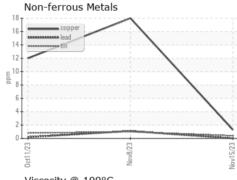


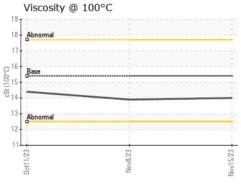
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

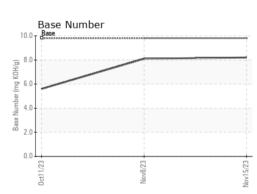
FLUID PROPE	KIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.9	14.4

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

Unique Number : 10751088

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0099888 : 06011944

Diagnosed

Received : 20 Nov 2023 : 21 Nov 2023 Diagnostician : Wes Davis

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126 Contact: Robert Hart

rhart@gflenv.com T: (580)461-1509

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

Report Id: GFL836 [WUSCAR] 06011944 (Generated: 11/21/2023 08:52:38) Rev: 1

Contact/Location: See also GFL823, 834, 837, 840 - Robert Hart - GFL836