

OIL ANALYSIS REPORT

(16KM0A) 429049-402451

Diesel Engine

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

Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

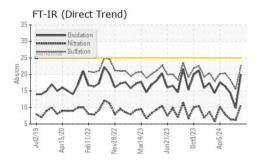
Fluid Condition

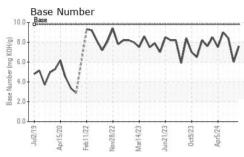
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

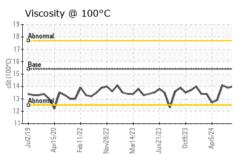
Sample Number Client Info GFL0124080 GFL0120145 GFL011723 Sample Date Client Info 10 Jul 2024 28 May 2024 13 May 2024 14	IAL)		IZUT9 APIZU	ZU FBDZUZZ NOVZUZZ	marzuza Junzuza Uctzuza	Aprzuz4	
Client Info	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 16750 16396 16235 16235 16396 hrs Client Info 0 0 0 600	Sample Number		Client Info		GFL0124080	GFL0120145	GFL0117231
Oil Age hrs Client Info Not Changd Not Changed Not Changed NoRMAL Not Changed NoRMAL NoRMAL NoB NoRMAL NoB 1.50	Sample Date		Client Info		10 Jul 2024	28 May 2024	13 May 2024
Colient Info	Machine Age	hrs	Client Info		16750		
NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 history2 NEG	Oil Age	hrs	Client Info		0	0	600
NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2 history2 NEG	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Fuel					NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imitibase Current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 <1 0 0 Chromium ppm ASTM D5185m >5 <1 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 3 0 2 Lead ppm ASTM D5185m >90 2 0 0 Copper ppm ASTM D5185m >5 0 0 <1 Vanadium ppm ASTM D5185m 5 0 0 <1	CONTAMINA	TION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 16 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR META	LS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>165	16	<1	3
Titanium	Chromium	ppm	ASTM D5185m	>5	<1	0	0
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >90 2 0 0 Tin ppm ASTM D5185m >5 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	3	0	2
Tin	Lead	ppm	ASTM D5185m	>150	2	0	0
Tin	Copper	ppm	ASTM D5185m	>90	2	0	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 3 2 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 -1 Magnesium ppm ASTM D5185m 0 0 0 -1 -1 0 0 -1		ppm	ASTM D5185m	>5	0	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 64 55 59 Manganese ppm ASTM D5185m 0 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 64 55 59 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m 1010 974 909 969 Calcium ppm ASTM D5185m 1070 1194 1038 1091 Phosphorus ppm ASTM D5185m 1150 935 975 1090 Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % *6 *ASTM D7844 </td <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>4</td> <td>3</td> <td>2</td>	Boron	ppm	ASTM D5185m	0	4	3	2
Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 1010 974 909 969 Calcium ppm ASTM D5185m 1070 1194 1038 1091 Phosphorus ppm ASTM D5185m 1150 935 975 1090 Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 <	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 974 909 969 Calcium ppm ASTM D5185m 1070 1194 1038 1091 Phosphorus ppm ASTM D5185m 1150 935 975 1090 Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION *ASTM D741	Molybdenum	ppm	ASTM D5185m	60	64	55	59
Calcium ppm ASTM D5185m 1070 1194 1038 1091 Phosphorus ppm ASTM D5185m 1150 935 975 1090 Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/.1mm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7414<	Manganese	ppm	ASTM D5185m	0	0	0	<1
Phosphorus ppm ASTM D5185m 1150 935 975 1090 Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 Potassium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION *	Magnesium	ppm	ASTM D5185m	1010	974	909	969
Zinc ppm ASTM D5185m 1270 1268 1175 1284 Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m >20 7 0 2 Potassium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm<	Calcium	ppm	ASTM D5185m	1070	1194	1038	1091
Sulfur ppm ASTM D5185m 2060 2679 3321 3716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m <1	Phosphorus	ppm	ASTM D5185m	1150	935	975	1090
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m <1	Zinc	ppm	ASTM D5185m	1270	1268	1175	1284
Silicon ppm ASTM D5185m >35 8 10 14 Sodium ppm ASTM D5185m <1 2 3 Potassium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	Sulfur	ppm	ASTM D5185m	2060	2679	3321	3716
Sodium ppm ASTM D5185m <1 2 3 Potassium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	CONTAMINAL	NTS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 7 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	Silicon	ppm	ASTM D5185m	>35	8	10	14
INFRA-RED	Sodium	ppm	ASTM D5185m		<1	2	3
Soot % % *ASTM D7844 > 7.5 0.6 0.5 0.1 Nitration Abs/cm *ASTM D7624 > 20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 > 30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 20.0 9.8 14.3	Potassium	ppm	ASTM D5185m	>20	7	0	2
Nitration Abs/cm *ASTM D7624 >20 10.8 6.2 6.4 Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	Soot %	%	*ASTM D7844	>7.5	0.6	0.5	0.1
Sulfation Abs/.1mm *ASTM D7415 >30 22.6 15.5 18.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	Nitration	Abs/cm	*ASTM D7624	>20	10.8	6.2	6.4
Oxidation Abs/.1mm *ASTM D7414 >25 20.0 9.8 14.3	Sulfation	Abs/.1mm	*ASTM D7415	>30		15.5	18.4
	FLUID DEGRA	ADATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 7.6 6.0 8.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.0	9.8	14.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.6	6.0	8.4



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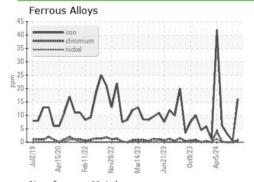


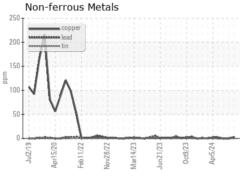


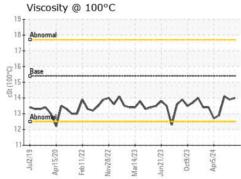
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

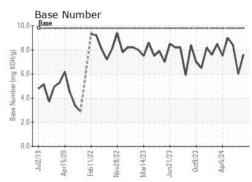
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.9	14.1

GRAPHS













Certificate 12367

Laboratory Sample No. Lab Number : 06237586 Unique Number : 11126420

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0124080

Test Package : FLEET

Received : 16 Jul 2024 **Tested**

: 17 Jul 2024 Diagnosed : 17 Jul 2024 - Wes Davis

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126

Contact: Loyce Stewart loyce.stewart@gflenv.com

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] 06237586 (Generated: 07/17/2024 08:48:39) Rev: 1

Contact/Location: GFL823,834,836,837,840 - Loyce Stewart - GFL836

T:

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