

OIL ANALYSIS REPORT

(NH4188) 3820

Diesel Engine

PETRO CANADA DURON SHP 15W40 (7 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

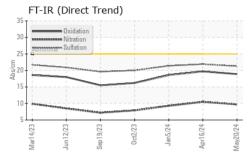
Fluid Condition

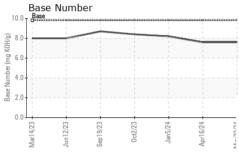
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

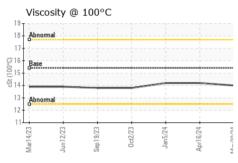
SAMPLE INFORMATION method limit/base current history1 history2	HL)		WillZUZ3	Junzuza aepzuza	OCIZOZS SMIZOZY ADIZOZY	Mdy2U24	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 16171 15483 14889 Oil Age hrs Client Info 16171 15483 14889 Oil Changed Client Info Changed Changea Changea Changea Changea <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0094899</th> <th>GFL0090137</th> <th>GFL0090125</th>	Sample Number		Client Info		GFL0094899	GFL0090137	GFL0090125
Oil Age hrs Client Info 16171 15483 14889 Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed Changed NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method WC Method WC Method NEG	Sample Date		Client Info		20 May 2024	16 Apr 2024	05 Jan 2024
Client Info Changed Changed NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		16171	15483	14889
NORMAL NORMAL NORMAL NORMAL	Oil Age	hrs	Client Info		16171	15483	14889
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 NEG NE	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit/base current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 9 11 7 Chromium ppm ASTM D5185m >4 0 <1 0 Nickel ppm ASTM D5185m >4 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >20 2 2 1 Lead ppm ASTM D5185m >90 2 2 2 2 Copper ppm ASTM D5185m >5 <1 1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 <1 0 ADDITIVES method limit/base	CONTAMINAT	ION	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 9 11 7 Chromium ppm ASTM D5185m >5 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 <1 <1 <1 Nickel ppm ASTM D5185m >4 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>165	9	11	7
Description Description	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Aluminum ppm ASTM D5185m >20 2 2 1 Lead ppm ASTM D5185m >150 4 25 4 Copper ppm ASTM D5185m >90 2 2 2 Tin ppm ASTM D5185m >5 <1	Titanium	ppm	ASTM D5185m	>2	0	<1	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >90 2 2 2 2 Tin ppm ASTM D5185m >5 <1	Aluminum	ppm	ASTM D5185m	>20	2	2	1
Tin	Lead	ppm	ASTM D5185m	>150	4	25	4
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 2 1 Barium ppm ASTM D5185m 0 0 0 <1 Molybdenum ppm ASTM D5185m 0 0 0 <1 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 1045 1033 990 Calcium ppm ASTM D5185m 1070 1166 1160 1109 Phosphorus ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>90	2	2	2
Cadmium ppm ASTM D5185m 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 2 1 Barium ppm ASTM D5185m 0 0 0 <1	Tin	ppm	ASTM D5185m	>5	<1	1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 2 1 Barium ppm ASTM D5185m 0 0 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium ppm ASTM D5185m 0 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 65 67 60 Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 1045 1033 990 Calcium ppm ASTM D5185m 1070 1166 1160 1109 Phosphorus ppm ASTM D5185m 1150 1129 1143 1129 Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7624 >20	Boron	ppm	ASTM D5185m	0	4	2	1
Manganese ppm ASTM D5185m 0 <1 <1 0 Magnesium ppm ASTM D5185m 1010 1045 1033 990 Calcium ppm ASTM D5185m 1070 1166 1160 1109 Phosphorus ppm ASTM D5185m 1150 1129 1143 1129 Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m >3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20<	Barium	ppm	ASTM D5185m	0	0	0	<1
Magnesium ppm ASTM D5185m 1010 1045 1033 990 Calcium ppm ASTM D5185m 1070 1166 1160 1109 Phosphorus ppm ASTM D5185m 1150 1129 1143 1129 Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	65	67	60
Calcium ppm ASTM D5185m 1070 1166 1160 1109 Phosphorus ppm ASTM D5185m 1150 1129 1143 1129 Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method	Manganese	ppm	ASTM D5185m	0	<1	<1	0
Phosphorus ppm ASTM D5185m 1150 1129 1143 1129 Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m >3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method	Magnesium	ppm	ASTM D5185m	1010	1045	1033	990
Zinc ppm ASTM D5185m 1270 1377 1339 1298 Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Calcium	ppm	ASTM D5185m	1070	1166	1160	1109
Sulfur ppm ASTM D5185m 2060 3609 3298 3042 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Phosphorus	ppm	ASTM D5185m	1150	1129	1143	1129
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Zinc	ppm	ASTM D5185m	1270	1377	1339	1298
Silicon ppm ASTM D5185m >35 6 8 10 Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Sulfur	ppm	ASTM D5185m	2060	3609	3298	3042
Sodium ppm ASTM D5185m 3 4 3 Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 1 3 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Silicon	ppm	ASTM D5185m	>35	6	8	10
INFRA-RED	Sodium	ppm	ASTM D5185m		3	4	3
Soot % % *ASTM D7844 > 7.5 0.3 0.4 0.3 Nitration Abs/cm *ASTM D7624 > 20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 > 30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 18.9 19.7 18.6	Potassium	ppm	ASTM D5185m	>20	1	3	0
Nitration Abs/cm *ASTM D7624 >20 9.7 10.5 9.3 Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.3 21.9 21.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Soot %	%	*ASTM D7844	>7.5	0.3	0.4	0.3
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Nitration	Abs/cm	*ASTM D7624	>20	9.7	10.5	9.3
Oxidation Abs/.1mm *ASTM D7414 >25 18.9 19.7 18.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.3	21.9	21.4
	FLUID DEGRADATION method limit/base current history1 history2						
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.9	19.7	18.6



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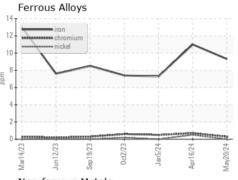


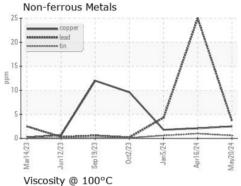


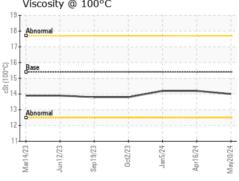
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

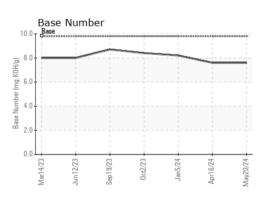
FLUID PROP	ERHES	method			history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.2	14.2

GRAPHS













Certificate 12367

Laboratory Sample No. Lab Number : 06185825 Unique Number : 11042577

: GFL0094899

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 21 May 2024

Tested : 22 May 2024

Diagnosed : 22 May 2024 - Wes Davis

657 Old US 17 Elizabeth City, NC US 27909 Contact: TOM BAIRD tom.baird@gflenv.com

Submitted By: TOM BAIRD

GFL Environmental - 044 - Elizabeth City

To discuss this sample report, contact Customer Service at 1-800-237-1369. T: (252)562-2645 * - 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) F: (252)264-4411