

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



7822M
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (36 QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

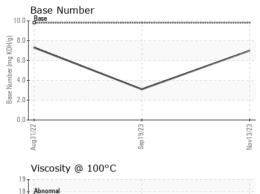
Fluid Condition

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

Sample Date	N SHP 15W40 (36	QIS)	Aug	Aug2022 Sep2023 Nov2023				
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Sample Date	Sample Number		Client Info		GFL0059255	GFL0085043	GFL0052126	
Machine Age hrs Client Info 9135 9000 8030 Oil Age hrs Client Info 9135 9000 8030 Oil Changed Client Info Changed N/A N/A Sample Status NoRMAL ABNORMAL NORMAL CONTAMINATION method Imitibase current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG Glycol WEAR METALS method limitubase current history1 history1 Iron ppm ASTM D5185m >90 29 87 81 Chromium ppm ASTM D5185m >20 1 2 3 <1 Chromium ppm ASTM D5185m >20 1 2 3 <1 Chromium ppm ASTM D5185m >2 0 0 <1 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>13 Nov 2023</th> <th>19 Sep 2023</th> <th>31 Aug 2022</th>	Sample Date		Client Info		13 Nov 2023	19 Sep 2023	31 Aug 2022	
Oil Age hrs Client Info 9135 9000 8030 Oil Changed Status Client Info Changed N/A N/A N/A Sample Status Imilian NORMAL ABNORMAL NORMAL 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 <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 <1.0 <1.0 <1.0 <1.0	Machine Age	hrs	Client Info		9135			
Client Info NoRMAL NA NA NA NORMAL		hrs	Client Info		9135	9000	8030	
NORMAL ABNORMAL NORMAL	-		Client Info		Changed	N/A	N/A	
Fuel	Sample Status				_	ABNORMAL	NORMAL	
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limil/base current history1 history2 Iron ppm ASTM D5185m >90 29 87 81 Chromium ppm ASTM D5185m >20 1 2 3 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 -1 0 Aluminum ppm ASTM D5185m >20 4 4 7 Lead ppm ASTM D5185m >40 0 -1 3 Copper ppm ASTM D5185m >40 0 -1 2 2 Tin ppm ASTM D5185m >33 -1 24 2 Tin ppm ASTM D5185m 0 0 0 0	CONTAMINATI	ON	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	
Description Description	Glycol		WC Method		NEG	NEG	NEG	
Chromium	WEAR METALS	S	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>90	29	87	81	
Description	Chromium	ppm	ASTM D5185m	>20	1	2	3	
Silver	Nickel	ppm	ASTM D5185m	>2	0	3	<1	
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	0	
Lead	Silver	ppm	ASTM D5185m	>2	0	<1	0	
Copper ppm ASTM D5185m >330 <1 24 2 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	4	4	7	
Copper	Lead	ppm	ASTM D5185m	>40	0	<1	3	
Namedium	Copper		ASTM D5185m	>330	<1	24	2	
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 3 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 2 <1 Manganese ppm ASTM D5185m 1010 956 978 903 Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 12		ppm	ASTM D5185m	>15	<1	4	<1	
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 3 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 41 2 59 Manganese ppm ASTM D5185m 0 41 2 4 Magnesium ppm ASTM D5185m 1010 956 978 903 Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6	Vanadium		ASTM D5185m		0	0	<1	
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0	
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 59 62 59 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 60 59 62 59 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	3	3	5	
Manganese ppm ASTM D5185m 0 <1 2 <1 Magnesium ppm ASTM D5185m 1010 956 978 903 Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1150 1044 999 1007 Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cmm *ASTM D	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium ppm ASTM D5185m 1010 956 978 903 Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1150 1044 999 1007 Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 22 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415	Molybdenum	ppm	ASTM D5185m	60	59	62	59	
Magnesium ppm ASTM D5185m 1010 956 978 903 Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1150 1044 999 1007 Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7815 >30 21.6 27.3 31.3 FLUID DEGRADATION *ASTM D7414<		ppm	ASTM D5185m	0	<1	2	<1	
Calcium ppm ASTM D5185m 1070 1062 1147 1040 Phosphorus ppm ASTM D5185m 1150 1044 999 1007 Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415	Magnesium	ppm	ASTM D5185m	1010	956	978	903	
Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Calcium		ASTM D5185m	1070	1062	1147	1040	
Zinc ppm ASTM D5185m 1270 1304 1267 1188 Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM	Phosphorus	ppm	ASTM D5185m	1150	1044	999	1007	
Sulfur ppm ASTM D5185m 2060 2812 2760 2646 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5		ppm	ASTM D5185m	1270	1304	1267	1188	
Silicon ppm ASTM D5185m >25 5 8 9 Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	Sulfur	ppm	ASTM D5185m	2060		2760	2646	
Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	CONTAMINANTS method limit/base current history1 history2							
Sodium ppm ASTM D5185m 2 7 6 Potassium ppm ASTM D5185m >20 6 12 3 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	Silicon	ppm	ASTM D5185m	>25	5	8	9	
INFRA-RED	Sodium	ppm	ASTM D5185m		2	7	6	
Soot % % *ASTM D7844 >6 0.6 3.6 2.2 Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	Potassium	ppm	ASTM D5185m	>20	6	12	3	
Nitration Abs/cm *ASTM D7624 >20 10.3 11.9 17.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	Soot %	%	*ASTM D7844	>6	0.6	3.6	2.2	
Sulfation Abs/.1mm *ASTM D7415 >30 21.6 27.3 31.3 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5	Nitration	Abs/cm	*ASTM D7624	>20	10.3	11.9	17.7	
Oxidation Abs/.1mm *ASTM D7414 >25 19.6 18.1 30.5				>30				
	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2	
	Oxidation	Abs/.1mm	*ASTM D7414	>25	19.6	18.1	30.5	
	Base Number (BN)							



OIL ANALYSIS REPORT

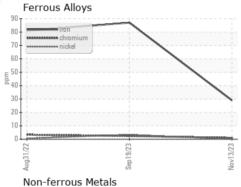


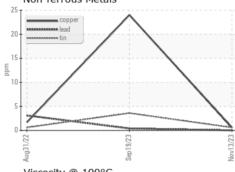
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	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

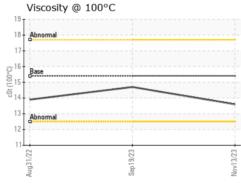
FLUID PROPE	RHES	method			history1	history
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	14.7	13.9

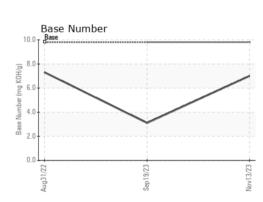
() 16 () 00 15 14 Sep19/23

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10749718 Test Package : FLEET

: GFL0059255 : 06010574

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Nov 2023 Diagnosed : 20 Nov 2023 Diagnostician : Wes Davis

GFL Environmental - 410 - Michigan West 39000 Van Born Rd

Wayne, MI US 48184 Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

* - 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)