

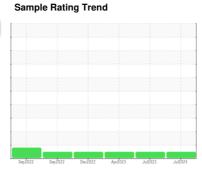
OIL ANALYSIS REPORT

(NR6797) [D service] 212017

Diesel Engine

Fluid

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





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

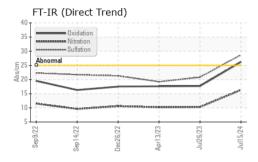
Fluid Condition

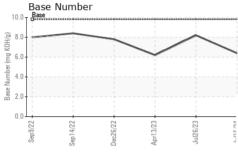
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

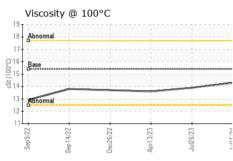
Oil Age hrs Client Info 900 514 750	(13)		Sepzuzz	sepzuzz ueczuzz	: Aprzoza Juizoza	JUI2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0124487	GFL0087792	GFL0073794
Oil Age hrs Client Info 900 514 750 Oil Changed Sample Status Client Info Changed Ch	Sample Date		Client Info		15 Jul 2024	26 Jul 2023	13 Apr 2023
Client Info Changed Changed Changed NORMAL NORMAL NORMAL	Machine Age	hrs	Client Info		65500	3677	3163
NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2	Oil Age	hrs	Client Info		900	514	750
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imilibase current history1 history2 WEAR METALS method limilibase current history1 history2 Iron ppm ASTM D5185m >100 70 24 24 Chromium ppm ASTM D5185m >20 2 <1 <1 Nickel ppm ASTM D5185m >4 <1 0 0 Silver ppm ASTM D5185m >4 <1 0 0 Aluminum ppm ASTM D5185m >40 2 0 <1 Copper ppm ASTM D5185m >40 2 0 <1 Tin ppm ASTM D5185m >15 2 <1 1 Vanadium ppm ASTM D5185m >10 0 0 Cadmium ppm ASTM D5185m 0 4 6 8	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 2 <1 <1 Nickel ppm ASTM D5185m >4 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	70	24	24
Titanium	Chromium	ppm	ASTM D5185m	>20	2	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	0
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 11 6 19 Tin ppm ASTM D5185m >15 2 <1	Aluminum	ppm	ASTM D5185m	>20	6	3	<1
Tin	Lead	ppm	ASTM D5185m	>40	2	0	<1
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 8 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 0 0 0 2 Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 1010 1024 1059 825 Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1070 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 128 Sulfur ppm ASTM D5185m 2060 3357	Copper	ppm	ASTM D5185m	>330	11	6	19
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 6 8 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 2 -1 -1 Magnesium ppm ASTM D5185m 1010 1024 1059 825 Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 3	Tin	ppm	ASTM D5185m	>15	2	<1	1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 60 69 72 69 Manganese ppm ASTM D5185m 0 2 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 69 72 69 Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 1010 1024 1059 825 Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624	Boron	ppm	ASTM D5185m	0	4	6	8
Manganese ppm ASTM D5185m 0 2 <1 <1 Magnesium ppm ASTM D5185m 1010 1024 1059 825 Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm	Barium	ppm	ASTM D5185m	0	0	0	2
Magnesium ppm ASTM D5185m 1010 1024 1059 825 Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm	Molybdenum	ppm	ASTM D5185m	60	69	72	69
Calcium ppm ASTM D5185m 1070 1256 1345 1299 Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method<	Manganese	ppm	ASTM D5185m	0	2	<1	<1
Phosphorus ppm ASTM D5185m 1150 1112 1214 1048 Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION *	Magnesium	ppm	ASTM D5185m	1010	1024	1059	825
Zinc ppm ASTM D5185m 1270 1404 1452 1288 Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1070</td> <th>1256</th> <td>1345</td> <td>1299</td>	Calcium	ppm	ASTM D5185m	1070	1256	1345	1299
Sulfur ppm ASTM D5185m 2060 3357 3966 3045 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m >20 3 0 2 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Phosphorus	ppm	ASTM D5185m	1150	1112	1214	1048
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m 6 2 0 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Zinc	ppm	ASTM D5185m	1270	1404	1452	1288
Silicon ppm ASTM D5185m >25 9 5 6 Sodium ppm ASTM D5185m 6 2 0 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Sulfur	ppm	ASTM D5185m	2060	3357	3966	3045
Sodium ppm ASTM D5185m 6 2 0 Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 3 0 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Silicon	ppm	ASTM D5185m	>25	9	5	6
INFRA-RED	Sodium	ppm	ASTM D5185m		6	2	0
Soot % % *ASTM D7844 >3 1.7 0.6 0.5 Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Potassium	ppm	ASTM D5185m	>20	3	0	2
Nitration Abs/cm *ASTM D7624 >20 16.3 10.3 10.2 Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 28.7 20.8 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Soot %	%	*ASTM D7844	>3	1.7	0.6	0.5
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Nitration	Abs/cm	*ASTM D7624	>20	16.3	10.3	10.2
Oxidation Abs/.1mm *ASTM D7414 >25 26.2 17.7 17.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	28.7	20.8	19.2
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	26.2	17.7	17.6



OIL ANALYSIS REPORT



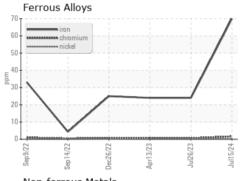


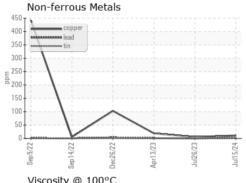


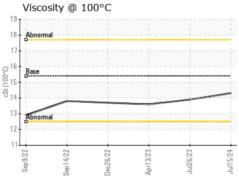
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

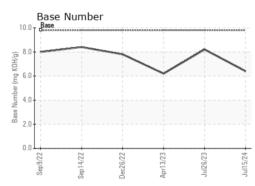
FLUID PROPE	RHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	13.9	13.6

GRAPHS













Certificate 12367

Laboratory Sample No.

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0124487 Lab Number : 06238782 Unique Number : 11127616

Received **Tested** Diagnosed

: 17 Jul 2024 : 17 Jul 2024 : 18 Jul 2024 - Sean Felton

GFL Environmental - 006 - Wilmington

3618 US Highway 421 N Wilmington, NC US 28401

Contact: Eric Wood eric.wood@gflenv.com T: (717)723-1956

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) F: (910)762-6880

Submitted By: NEIL GIFFIN

Report Id: GFL006 [WUSCAR] 06238782 (Generated: 07/18/2024 16:17:11) Rev: 1