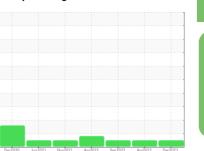


OIL ANALYSIS REPORT

Sample Rating Trend









DT739
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 10W30 (--- 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

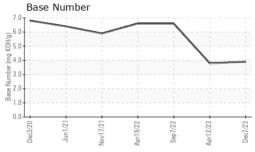
Fluid Condition

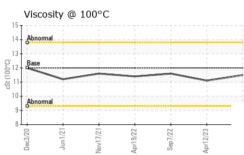
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		·	Dec2020	Jun2021 Nov2021	Aprž022 Sepž022 Aprž023	Dec2023	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age mis Client Info 186494 157747 131976 Oil Age mis Client Info 28747 25771 Oil Changed Cha	Sample Number		Client Info		PCA0103306	PCA0091172	PCA0074862
Oil Age mls Client Info 28747 25771 0 Oil Changed Sample Status Client Info Changed	Sample Date		Client Info		07 Dec 2023	12 Apr 2023	07 Sep 2022
Oil Changed Sample Status Client Info Changed NORMAL Changed NoE Change NoE Change NoE Change N	Machine Age	mls	Client Info		186494	157747	131976
NORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history2	Oil Age	mls	Client Info		28747	25771	0
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imitibase current history1 history2 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 26 20 16 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >5 5 4 1 Silver ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 4 3 5 Lead ppm ASTM D5185m >40 3 1 0 Copper ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m >10 0 0	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
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 1 1 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >5 5 4 1 Titanium ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>120	26	20	16
Titanium ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 4 3 5 Lead ppm ASTM D5185m >330 5 5 4 Copper ppm ASTM D5185m >330 5 5 4 Tin ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m >15 1 <1 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 12 <1 0 0 Barium ppm ASTM D5185m 0	Chromium	ppm	ASTM D5185m	>20	1	1	<1
Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >20 4 3 5 Lead ppm ASTM D5185m >40 3 1 0 Copper ppm ASTM D5185m >330 5 5 4 Tin ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 2 <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 <1 <1 0 0 Barium ppm ASTM D5185m 0 12 2 2 0 Molybdenum ppm ASTM D5185m 50 66 66 63 3 Mangnesium ppm ASTM D5185m	Nickel	ppm	ASTM D5185m	>5	5	4	1
Aluminum ppm ASTM D5185m >20 4 3 5 Lead ppm ASTM D5185m >40 3 1 0 Copper ppm ASTM D5185m >330 5 5 4 Tin ppm ASTM D5185m >15 1 <1	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead ppm ASTM D5185m >40 3 1 0 Copper ppm ASTM D5185m >330 5 5 4 Tin ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 <1 <1 0 Barium ppm ASTM D5185m 0 12 2 0 Molybdenum ppm ASTM D5185m 50 66 66 63 3 Manganese ppm ASTM D5185m 0 1 <1 <1 <1 Magnesium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 1050	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper ppm ASTM D5185m >330 5 5 4 Tin ppm ASTM D5185m >15 1 <1	Aluminum	ppm	ASTM D5185m	>20	4	3	5
Tin ppm ASTM D5185m >15 1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 <1 <1 0 Barium ppm ASTM D5185m 0 12 2 0 Molybdenum ppm ASTM D5185m 50 66 66 66 63 Manganese ppm ASTM D5185m 50 937 849 886 Calcium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 180 1275 1170 1199 Sulfur ppm ASTM D5185m 260	Lead	ppm	ASTM D5185m	>40	3	1	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 <1 <1 0 Barium ppm ASTM D5185m 0 12 2 0 Molybdenum ppm ASTM D5185m 50 66 66 63 Manganese ppm ASTM D5185m 50 96 66 66 63 Magnesium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 1050 1188 1062 1084 Phosphorus ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current h	Copper	ppm	ASTM D5185m	>330	5	5	4
Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 2 <1	Tin	ppm	ASTM D5185m	>15	1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium		ASTM D5185m		<1	0	0
Barium ppm ASTM D5185m 0 12 2 0 Molybdenum ppm ASTM D5185m 50 66 66 63 Manganese ppm ASTM D5185m 0 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 50 66 66 63 Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 1050 1188 1062 1084 Phosphorus ppm ASTM D5185m 1002 889 943 Zinc ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 >4 0.8 0.7<	Boron	ppm	ASTM D5185m	2	<1	<1	0
Manganese ppm ASTM D5185m 0 1 <1 <1 Magnesium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 1050 1188 1062 1084 Phosphorus ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 1180 1275 1170 1199 Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7845<	Barium	ppm	ASTM D5185m	0	12	2	0
Magnesium ppm ASTM D5185m 950 937 849 886 Calcium ppm ASTM D5185m 1050 1188 1062 1084 Phosphorus ppm ASTM D5185m 1002 889 943 Zinc ppm ASTM D5185m 1180 1275 1170 1199 Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/:nm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/:nm *ASTM D7415 >30	Molybdenum	ppm	ASTM D5185m	50	66	66	63
Calcium ppm ASTM D5185m 1050 1188 1062 1084 Phosphorus ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 1180 1275 1170 1199 Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION <	Manganese	ppm	ASTM D5185m	0	1	<1	<1
Phosphorus ppm ASTM D5185m 995 1002 889 943 Zinc ppm ASTM D5185m 1180 1275 1170 1199 Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/	Magnesium	ppm	ASTM D5185m	950	937	849	886
Zinc ppm ASTM D5185m 1180 1275 1170 1199 Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m 20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Calcium	ppm	ASTM D5185m	1050	1188	1062	1084
Sulfur ppm ASTM D5185m 2600 2565 2381 2480 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Phosphorus	ppm	ASTM D5185m	995	1002	889	943
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Zinc	ppm	ASTM D5185m	1180	1275	1170	1199
Silicon ppm ASTM D5185m >25 7 6 5 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Sulfur	ppm	ASTM D5185m	2600	2565	2381	2480
Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 8 6 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Silicon	ppm	ASTM D5185m	>25	7	6	5
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Sodium	ppm	ASTM D5185m		4	2	4
Soot % % *ASTM D7844 >4 0.8 0.7 0.8 Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Potassium	ppm	ASTM D5185m	>20	8	6	2
Nitration Abs/cm *ASTM D7624 >20 11.0 9.7 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 24.2 20.9 24.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Soot %	%	*ASTM D7844	>4	8.0	0.7	0.8
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Nitration	Abs/cm	*ASTM D7624	>20	11.0	9.7	10.5
Oxidation Abs/.1mm *ASTM D7414 >25 20.2 17.3 18.7	Sulfation	Abs/.1mm	*ASTM D7415	>30	24.2	20.9	24.0
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 3.9 3.8 6.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	20.2	17.3	18.7
	Base Number (BN)	mg KOH/g	ASTM D2896		3.9	3.8	6.6



OIL ANALYSIS REPORT

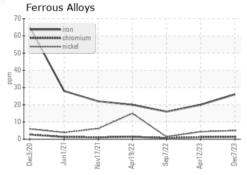


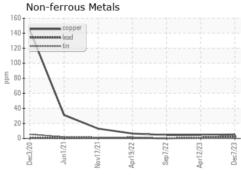


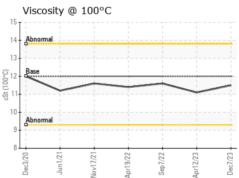
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

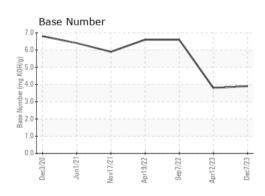
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	12.00	11.5	11.1	11.6	

GRAPHS













Certificate L2367

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

: PCA0103306 : 06036542 : 10791771

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 15 Dec 2023 : 18 Dec 2023 Diagnosed

Diagnostician : Wes Davis

NW WHITE & CO - ANDERSON DIVISION

2605 RIVER RD PIEDMONT, SC US 29673 Contact: James Threatt

jthreatt@nwwhite.com

T: (864)918-4646

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)