

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 223074

Component Diesel Engine

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

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.

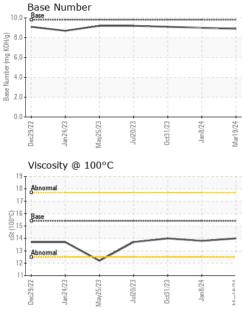
Fluid Condition

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

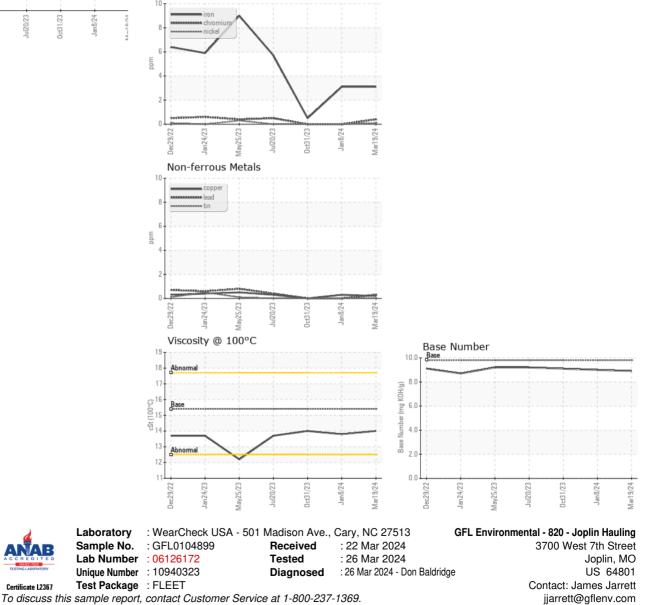
Sample Date Client Info 19 Mar 2024 08 Jan 2024 31 Oct 2023 Machine Age mis Client Info 365049 365049 365049 365049 Oil Age mis Client Info 365049 365049 365049 365049 Oil Changed Client Info N/A Changed Changed Changed Sample Status method imit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Second Machine MPP MSTM D5185m >5 <1 0 0 Vexer WC Method >5 <1 0 0 Vexer Mpm ASTM D5185m >5 <1 0 0 Vexer Mpm ASTM D5185m >3 0 0 0 Silver	SAMPLE INFORM	/ ATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 365049 365049 365049 365049 Oil Age mls Client Info N/A Changed Changed Sample Status Client Info N/A Changed Changed Sample Status method Iimit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Wear WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >5 <1 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >30 2 <1 0 0 Copper ppm ASTM D5185m >30 <1 0 0 0	Sample Number		Client Info		GFL0104899	GFL0104926	GFL0088082
Oil Age mis Client Info 365049 365049 365049 365049 Oil Changed Client Info N/A Changed Changed Sample Status method imit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1 Chronium ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 0 Lead ppm ASTM D5185m >30 2 <1 0 Copper ppm ASTM D5185m >30 2 <1 0 Copper ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m 0 0 0<	Sample Date		Client Info		19 Mar 2024	08 Jan 2024	31 Oct 2023
Oil Changed Sample Status Client Info N/A Changed NORMAL Changed NORMAL Changed NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1 Chromium ppm ASTM D5185m >5 <1 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >30 <1 0 0 Copper ppm ASTM D5185m >30 <1 0 0 Cadmium ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Roron ppm ASTM D5185m 0 0 0 0 Roron ppm ASTM D5185m <td< th=""><th>Machine Age</th><th>mls</th><th>Client Info</th><th></th><th>365049</th><th>365049</th><th>365049</th></td<>	Machine Age	mls	Client Info		365049	365049	365049
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WeAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1 Ohromium ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >30 2 <1 0 Cadd ppm ASTM D5185m >30 2 <1 0 Caddium ppm ASTM D5185m >5 0 0 0 Caddium<	Oil Age	mls	Client Info		365049	365049	365049
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1 Chromium ppm ASTM D5185m >5 <1 0 0 Silver ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Lead ppm ASTM D5185m >30 <1 0 0 Cadmium ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m <10 0 0 0 Cadmium </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>Changed</th> <th>Changed</th>	Oil Changed		Client Info		N/A	Changed	Changed
Fuel WC Method >5 <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
GlycolWC MethodNEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>8033<1ChromiumppmASTM D5185m>5<100NickelppmASTM D5185m>2<100NickelppmASTM D5185m>2<100SilverppmASTM D5185m>3000AluminumppmASTM D5185m>302<10LeadppmASTM D5185m>50000CopperppmASTM D5185m>50000VanadiumppmASTM D5185m>5000CadmiumppmASTM D5185m0<100BoronppmASTM D5185m0000MolybelenumppmASTM D5185m0000MagneseppmASTM D5185m0000MagnesiumppmASTM D5185m10101374944911CalciumppmASTM D5185m107013771028961PhosphorusppmASTM D5185m107013771028961PhosphorusppmASTM D5185m1270172312001207SulfurpmASTM D5185m2060436030682990	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 3 3 <1 Chromium ppm ASTM D5185m >5 <1 0 0 Nickel ppm ASTM D5185m >2 <1 0 0 Titanium ppm ASTM D5185m >2 <1 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 0 Lead ppm ASTM D5185m >30 <1 0 0 Copper ppm ASTM D5185m >5 0 0 0 Vanadium ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0	Water		WC Method	>0.2	NEG	NEG	NEG
Iron ppm ASTM D5185m >80 3 3 <1	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 <1	WEAR METALS	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 <1	Iron	ppm	ASTM D5185m	>80	3	3	<1
Titanium ppm ASTM D5185m <1	Chromium	ppm	ASTM D5185m	>5	<1	0	0
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 0 Lead ppm ASTM D5185m >30 <1 0 0 Copper ppm ASTM D5185m >150 <1 <1 0 Tin ppm ASTM D5185m >5 0 0 0 Vanadium ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m 0 <1 0 0 Cadmium ppm ASTM D5185m 0 <1 2 <1 Boron ppm ASTM D5185m 0 <1 2 <1 Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 1010 1374	Nickel	ppm	ASTM D5185m	>2	<1	0	0
Aluminum ppm ASTM D5185m >30 2 <1	Titanium	ppm	ASTM D5185m		<1	0	0
Lead ppm ASTM D5185m >30 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >150 <1	Aluminum	ppm	ASTM D5185m	>30	2	<1	0
Tin ppm ASTM D5185m >5 0 0 0 Vanadium ppm ASTM D5185m >5 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 <1	Lead	ppm	ASTM D5185m	>30	<1	0	0
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>150	<1	<1	0
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m0<12<1BariumppmASTM D5185m0000MolybdenumppmASTM D5185m0000MolybdenumppmASTM D5185m60815855ManganeseppmASTM D5185m0000MagnesiumppmASTM D5185m10101374944911CalciumppmASTM D5185m107013771028961PhosphorusppmASTM D5185m115013891010978ZincppmASTM D5185m1270172312001207SulfurppmASTM D5185m2060436030682990CONTAMINANTSmethodlimit/basecurrenthistory1history2	Tin	ppm	ASTM D5185m	>5	0	0	0
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m0<12<1BariumppmASTM D5185m0000MolybdenumppmASTM D5185m0000MolybdenumppmASTM D5185m0000ManganeseppmASTM D5185m0000MagnesiumppmASTM D5185m10101374944911CalciumppmASTM D5185m107013771028961PhosphorusppmASTM D5185m115013891010978ZincppmASTM D5185m1270172312001207SulfurppmASTM D5185m2060436030682990CONTAMINANTSmethodlimit/basecurrenthistory1history2	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 60 81 58 55 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 1010 1374 944 911 Calcium ppm ASTM D5185m 1070 1377 1028 961 Phosphorus ppm ASTM D5185m 1150 1389 1010 978 Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 81 58 55 Manganese ppm ASTM D5185m 0<	Boron	ppm	ASTM D5185m	0	<1	2	<1
Manganese ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m 1010 1374 944 911 Calcium ppm ASTM D5185m 1010 1377 1028 961 Phosphorus ppm ASTM D5185m 1150 1389 1010 978 Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 1374 944 911 Calcium ppm ASTM D5185m 1070 1377 1028 961 Phosphorus ppm ASTM D5185m 1150 1389 1010 978 Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	Molybdenum	ppm	ASTM D5185m	60	81	58	55
Calcium ppm ASTM D5185m 1070 1377 1028 961 Phosphorus ppm ASTM D5185m 1150 1389 1010 978 Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	Manganese	ppm	ASTM D5185m	0	0	0	0
Phosphorus ppm ASTM D5185m 1150 1389 1010 978 Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	Magnesium	ppm	ASTM D5185m	1010	1374	944	911
Zinc ppm ASTM D5185m 1270 1723 1200 1207 Sulfur ppm ASTM D5185m 2060 4360 3068 2990 CONTAMINANTS method limit/base current history1 history2	Calcium	ppm	ASTM D5185m	1070	1377	1028	961
SulfurppmASTM D5185m2060436030682990CONTAMINANTSmethodlimit/basecurrenthistory1history2	Phosphorus	ppm	ASTM D5185m		1389		
CONTAMINANTS method limit/base current history1 history2	Zinc	ppm	ASTM D5185m	1270	1723	1200	1207
	Sulfur	ppm	ASTM D5185m	2060	4360	3068	2990
	CONTAMINAN	TS	method	limit/base	current	history1	history2
	Silicon	ppm	ASTM D5185m	>20	7	3	4
Sodium ppm ASTM D5185m 2 <1	Sodium	ppm	ASTM D5185m		2	<1	1
Potassium ppm ASTM D5185m >20 <1	Potassium	ppm	ASTM D5185m	>20	<1	<1	0
INFRA-RED method limit/base current history1 history2	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	*ASTM D7844	>3	0.1		
Nitration Abs/cm *ASTM D7624 >20 4.2 4.5 4.3	Nitration	Abs/cm	*ASTM D7624	>20	4.2	4.5	4.3
Sulfation Abs/.1mm *ASTM D7415 >30 17.1 17.1 17.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.1	17.1	17.0
FLUID DEGRADATION method limit/base current history1 history2	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.3	12.3	12.3
Oxidation Abs/.1mm *ASTM D7414 >25 12.3 12.3 12.3	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.9	9.0	9.1

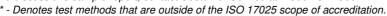


OIL ANALYSIS REPORT



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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.8	14.0
GRAPHS						
Ferrous Alloys						





Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

F:

T: (417)310-2802