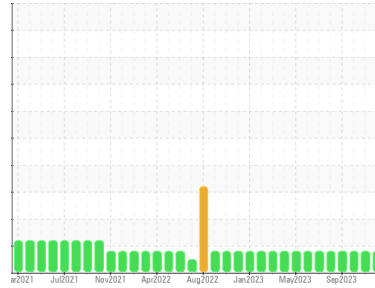


OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Area
Irvington
Machine Id
Unit 02 DB060102E
Component
Natural Gas Engine
Fluid
PETRO CANADA DURON MONOGRADE HD 40W (250 GAL)

DIAGNOSIS

Recommendation

We advise that you check the fuel injection system. Resample at the next service interval to monitor. (Customer Sample Comment: Top Up Amount: 19 GAL)

Wear

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil.

Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The AN level is acceptable for this fluid.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0105166	PCA0105168	PCA0105170
Sample Date	Client Info	13 Dec 2023	01 Nov 2023	03 Oct 2023
Machine Age	hrs	26689	26033	25292
Oil Age	hrs	18261	17605	16864
Oil Changed	Client Info	Oil Added	Oil Added	Oil Added
Sample Status		ABNORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Water	WC Method >0.1	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2
Iron	ppm ASTM D5185m >50	12	12	13
Chromium	ppm ASTM D5185m >4	<1	<1	<1
Nickel	ppm ASTM D5185m >2	0	0	0
Titanium	ppm ASTM D5185m	0	0	<1
Silver	ppm ASTM D5185m >3	0	0	0
Aluminum	ppm ASTM D5185m >9	<1	<1	0
Lead	ppm ASTM D5185m >30	12	11	12
Copper	ppm ASTM D5185m >35	11	11	12
Tin	ppm ASTM D5185m >4	2	2	2
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	14	16	15
Barium	ppm ASTM D5185m	0	0	<1
Molybdenum	ppm ASTM D5185m	3	5	5
Manganese	ppm ASTM D5185m	<1	0	<1
Magnesium	ppm ASTM D5185m	800	743	712
Calcium	ppm ASTM D5185m	1074	1107	1093
Phosphorus	ppm ASTM D5185m	885	826	869
Zinc	ppm ASTM D5185m	1165	1117	1125
Sulfur	ppm ASTM D5185m	2072	2051	2249

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >+100	3	4	2
Sodium	ppm ASTM D5185m	5	7	2
Potassium	ppm ASTM D5185m >20	2	<1	2
Fuel	% ASTM D3524 >4.0	▲ 4.6	▲ 6.2	▲ 5.3

INFRA-RED

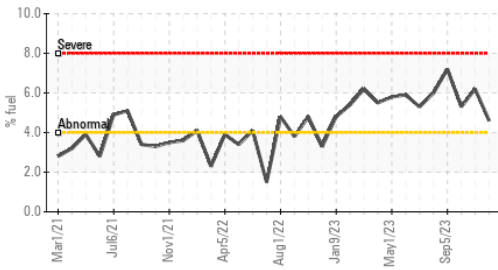
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	0.1	0.1	0.1
Nitration	Abs/cm *ASTM D7624 >20	6.8	6.9	6.8
Sulfation	Abs/.1mm *ASTM D7415 >30	17.1	17.0	16.7

FLUID DEGRADATION

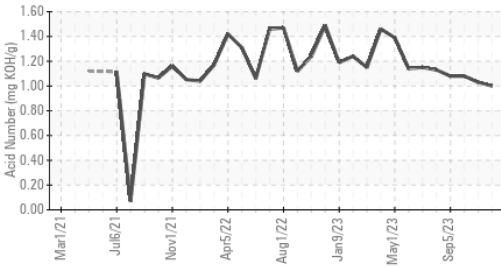
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	11.1	11.0	10.7
Acid Number (AN)	mg KOH/g ASTM D8045	1.00	1.03	1.08
Base Number (BN)	mg KOH/g ASTM D2896 8.5	7.55	6.91	8.52

OIL ANALYSIS REPORT

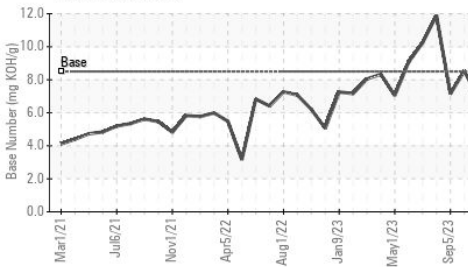
▲ Fuel Dilution



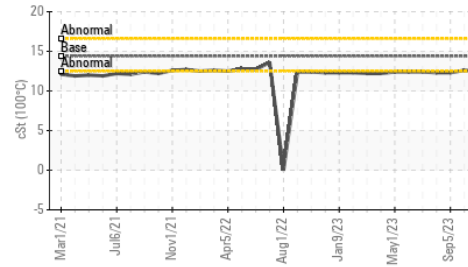
Acid Number



Base Number



Viscosity @ 100°C



VISUAL

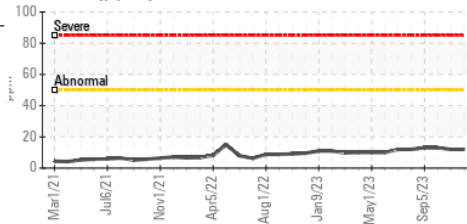
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

FLUID PROPERTIES

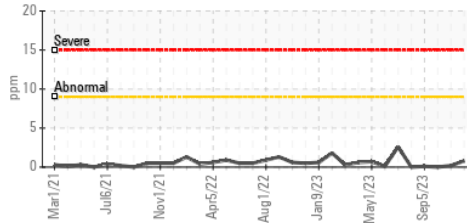
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	12.6	12.5

GRAPHS

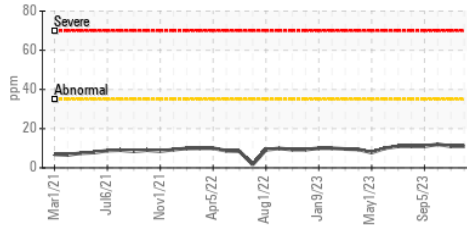
Iron (ppm)



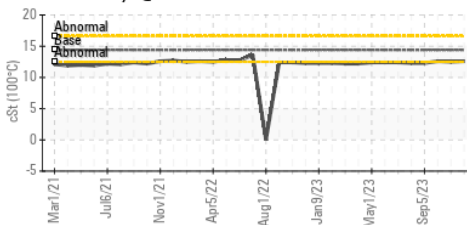
Aluminum (ppm)



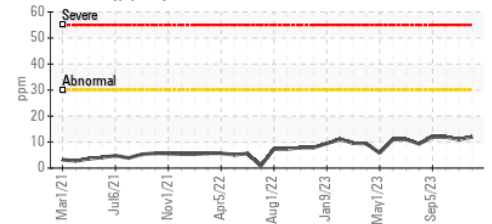
Copper (ppm)



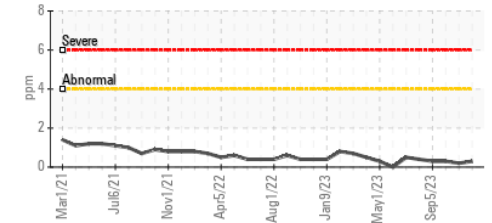
Viscosity @ 100°C



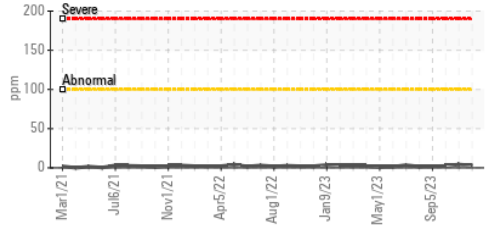
Lead (ppm)



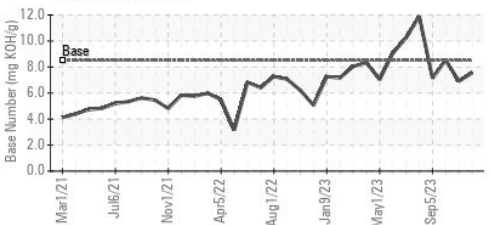
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0105166 **Received** : 19 Dec 2023
Lab Number : 06039538 **Diagnosed** : 22 Dec 2023
Unique Number : 10794767 **Diagnostician** : Sean Felton
Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel)

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)

Magellan Midstream LP - Omaha
 9405 Bennington Road
 Omaha, NE
 US 68122
 Contact: Zach Jones
 zach.jones@magellanlp.com

T:
F: