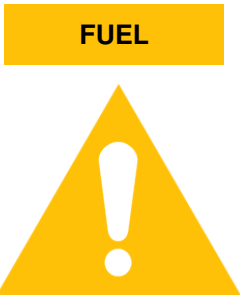
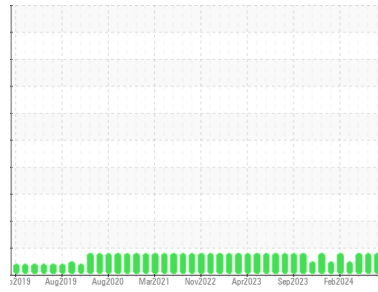


OIL ANALYSIS REPORT

Area
MARSHALL
 Machine Id
[MARSHALL] DB100101E Unit 01
 Component
Natural Gas Engine
 Fluid
PETRO CANADA DURON MONOGRADE HD 40W (250 GAL)

Sample Rating Trend



DIAGNOSIS

- Recommendation**
 No corrective action is recommended at this time. Resample at the next service interval to monitor.
- Wear**
 All component wear rates are normal.
- Contamination**
 Light fuel dilution occurring.
- Fluid Condition**
 The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	PCA0114500	PCA0114494	PCA0114493
Sample Date	Client Info	28 Jun 2024	30 May 2024	29 Apr 2024
Machine Age	hrs	264	788694	788694
Oil Age	hrs	16877	16588	16214
Oil Changed	Client Info	Filtered	Filtered	N/A
Sample Status		MARGINAL	MARGINAL	MARGINAL

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	4	4	3
Chromium	ppm ASTM D5185m >4	0	0	0
Nickel	ppm ASTM D5185m >2	0	0	0
Titanium	ppm ASTM D5185m	0	0	0
Silver	ppm ASTM D5185m >3	0	0	0
Aluminum	ppm ASTM D5185m >9	2	2	1
Lead	ppm ASTM D5185m >30	<1	<1	<1
Copper	ppm ASTM D5185m >35	2	2	1
Tin	ppm ASTM D5185m >4	<1	0	0
Vanadium	ppm ASTM D5185m	0	0	0
Cadmium	ppm ASTM D5185m	0	0	0

ADDITIVES

method	limit/base	current	history1	history2
Boron	ppm ASTM D5185m	2	0	0
Barium	ppm ASTM D5185m	0	0	0
Molybdenum	ppm ASTM D5185m	1	2	2
Manganese	ppm ASTM D5185m	0	0	0
Magnesium	ppm ASTM D5185m	885	912	943
Calcium	ppm ASTM D5185m	1145	1114	1168
Phosphorus	ppm ASTM D5185m	1164	1094	1146
Zinc	ppm ASTM D5185m	1370	1285	1338
Sulfur	ppm ASTM D5185m	3703	3409	3693

CONTAMINANTS

method	limit/base	current	history1	history2
Silicon	ppm ASTM D5185m >+100	2	0	5
Sodium	ppm ASTM D5185m	1	1	1
Potassium	ppm ASTM D5185m >20	2	2	<1
Fuel	% ASTM D3524 >4.0	▲ 2.0	▲ 2.2	▲ 2.0

INFRA-RED

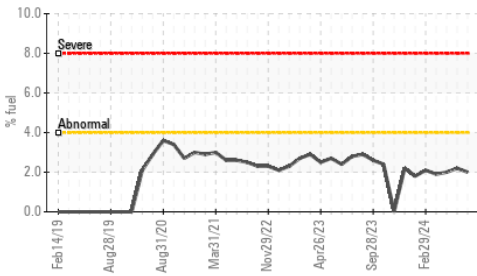
method	limit/base	current	history1	history2
Soot %	% *ASTM D7844	0.1	0.1	0
Nitration	Abs/cm *ASTM D7624 >20	4.2	4.5	4.5
Sulfation	Abs/.1mm *ASTM D7415 >30	13.3	13.7	15.1

FLUID DEGRADATION

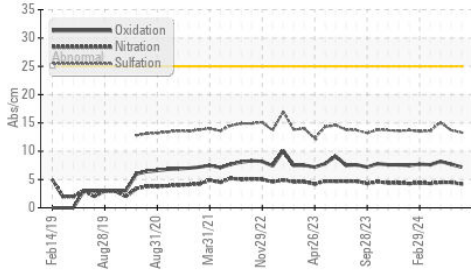
method	limit/base	current	history1	history2
Oxidation	Abs/.1mm *ASTM D7414 >25	7.2	7.7	8.2
Acid Number (AN)	mg KOH/g ASTM D8045	1.40	2.21	1.36
Base Number (BN)	mg KOH/g ASTM D2896 8.5	8.69	6.7	8.22

OIL ANALYSIS REPORT

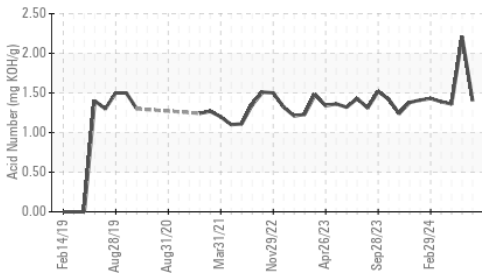
Fuel Dilution



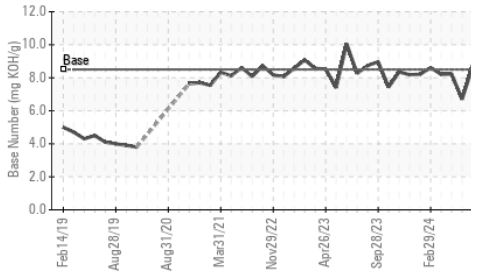
FT-IR (Direct Trend)



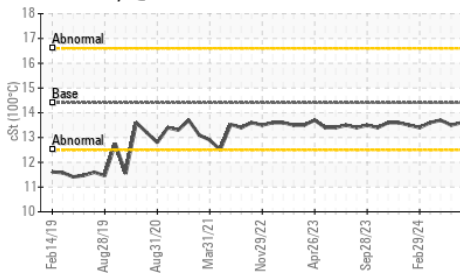
Acid Number



Base Number



Viscosity @ 100°C



VISUAL

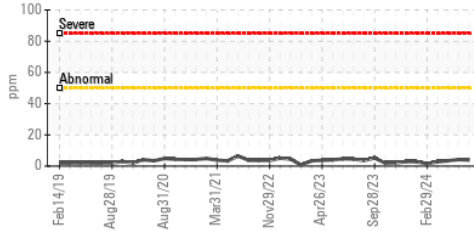
	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar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

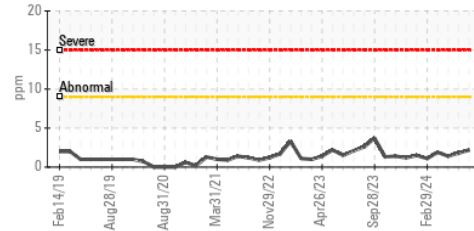
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	13.6	13.5

GRAPHS

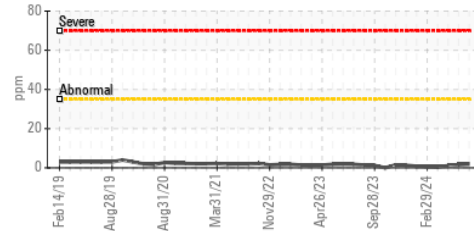
Iron (ppm)



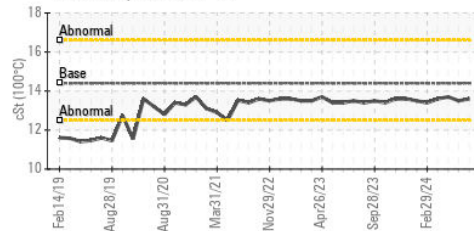
Aluminum (ppm)



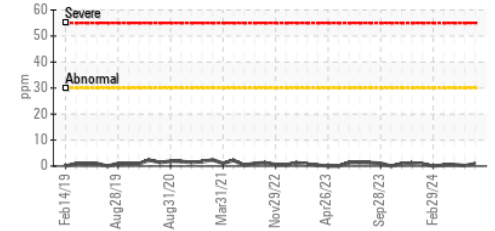
Copper (ppm)



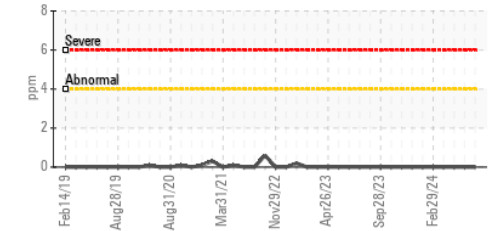
Viscosity @ 100°C



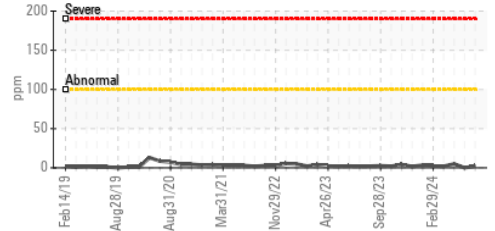
Lead (ppm)



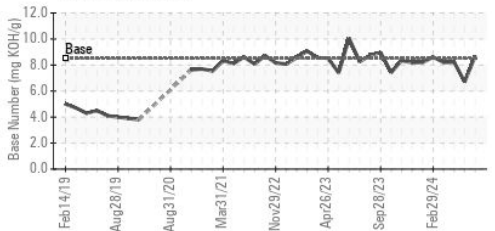
Chromium (ppm)



Silicon (ppm)



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : PCA0114500

Lab Number : 06229276

Unique Number : 11112769

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)

Received : 05 Jul 2024

Tested : 09 Jul 2024

Diagnosed : 09 Jul 2024 - Sean Felton

Magellan Midstream LP - Marshall

1601 West College Drive

Marshall, MN

US 56258

Contact: Brett Erickson

brett.erickson@magellanlp.com

T: (519)822-1260

F: