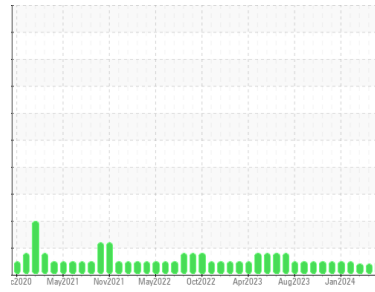




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area

Nashville

Machine Id

[Nashville] Oil - Port Main Engine

Component

Port Main Engine

Fluid

MOBIL 15W40 (180 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 suitable for further service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC0874898	WC0874890	WC0874902
Sample Date	Client Info		13 May 2024	15 Apr 2024	18 Mar 2024
Machine Age	hrs	Client Info	59999	59565	59106
Oil Age	hrs	Client Info	334	4441	3983
Oil Changed	Client Info		Not Chngd	Filtered	Not Chngd
Sample Status			NORMAL	ABNORMAL	ABNORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >75	4	10	12
Chromium	ppm	ASTM D5185m >8	<1	<1	0
Nickel	ppm	ASTM D5185m >2	<1	0	0
Titanium	ppm	ASTM D5185m >3	<1	0	0
Silver	ppm	ASTM D5185m >2	<1	0	0
Aluminum	ppm	ASTM D5185m >15	2	2	2
Lead	ppm	ASTM D5185m >18	<1	0	0
Copper	ppm	ASTM D5185m >80	<1	0	<1
Tin	ppm	ASTM D5185m >14	<1	<1	0
Vanadium	ppm	ASTM D5185m	<1	0	0
Cadmium	ppm	ASTM D5185m	<1	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	46	39	40
Barium	ppm	ASTM D5185m	<1	0	0
Molybdenum	ppm	ASTM D5185m	46	46	46
Manganese	ppm	ASTM D5185m	<1	<1	<1
Magnesium	ppm	ASTM D5185m	1056	1112	1123
Calcium	ppm	ASTM D5185m	1388	1644	1661
Phosphorus	ppm	ASTM D5185m	1021	1078	1095
Zinc	ppm	ASTM D5185m	1215	1362	1376
Sulfur	ppm	ASTM D5185m	3341	3781	3929

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >20	3	2	2
Sodium	ppm	ASTM D5185m >118	2	2	1
Potassium	ppm	ASTM D5185m >20	4	4	3
Water	%	ASTM D6304 >0.1	NEG	NEG	NEG

INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	0	2.7	2.9
Nitration	Abs/cm	*ASTM D7624 >20	0.0	10.2	10.5
Sulfation	Abs/.1mm	*ASTM D7415 >30	0.0	25.6	25.1

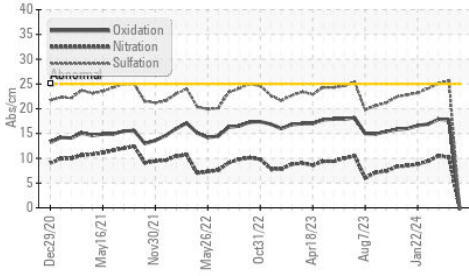
FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	0.0	17.7	17.9
Base Number (BN)	mg KOH/g	ASTM D2896	12.17	12.22	11.66



OIL ANALYSIS REPORT

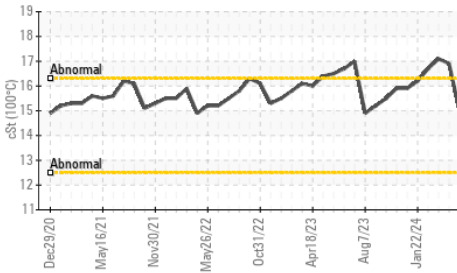
FT-IR (Direct Trend)



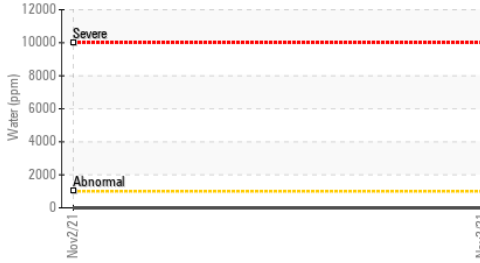
Water (KF)



Viscosity @ 100°C



Water (KF)

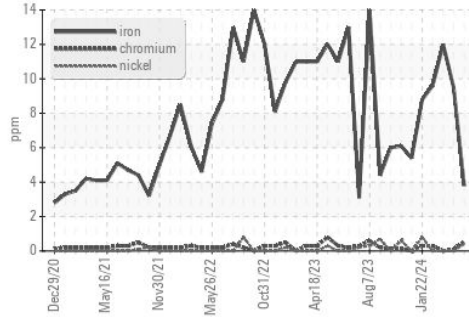


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance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

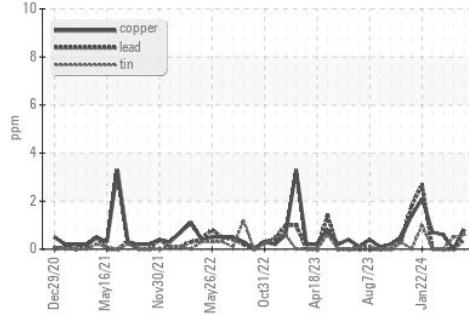
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.0	▲ 16.9	▲ 17.1

GRAPHS

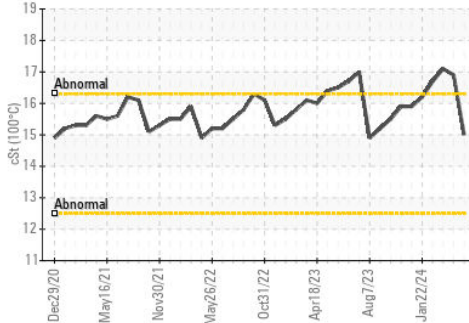
Ferrous Alloys



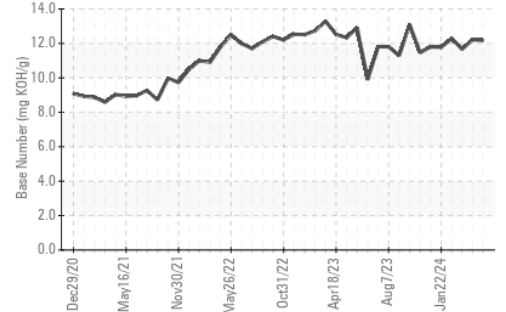
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC0874898

Lab Number : 06181564

Unique Number : 11032890

Test Package : IND 2 (Additional Tests: KF)

Received : 16 May 2024

Tested : 20 May 2024

Diagnosed : 20 May 2024 - Sean Felton

MARATHON PETROLEUM CO.

101 12TH ST

CATLETTSBURG, KY

US 41169

Contact: CORY GUMBERT

cagumbert@marathonpetroleum.com

T: (606)585-3950

F: x:

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)