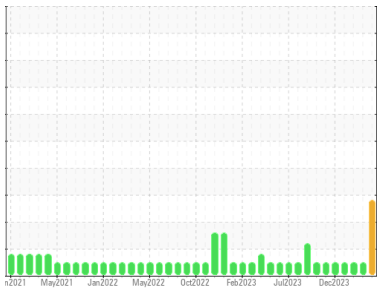
OIL ANALYSIS REPORT

Sample Rating Trend



WATER

Area
Detroit
Machine Id
[Detroit] Oil - Starboard Reduction Gear
Component
Starboard Reduction Gear
Fluid
SAE 30W (35 GAL)

DIAGNOSIS

Recommendation
Check seals and/or filters for points of contaminant entry. The oil is near the end of it`s useful service life, recommend schedule an oil change. We recommend an early resample to monitor this condition. (Customer Sample Comment: Completed by Jeff Baldwin)

Wear
All component wear rates are normal.

Contamination
There is a moderate concentration of water present in the oil.

Fluid Condition
An increase in the AN level is noted.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0804765**	WC0804784	WC0804771
Sample Date		Client Info		**20 May 2024**	22 Apr 2024	05 Feb 2024
Machine Age	hrs	Client Info		**30188**	29587	27857
Oil Age	hrs	Client Info		**4999**	4398	2668
Oil Changed		Client Info		**Not Changd**	N/A	Not Changd
Sample Status				**ABNORMAL**	NORMAL	NORMAL

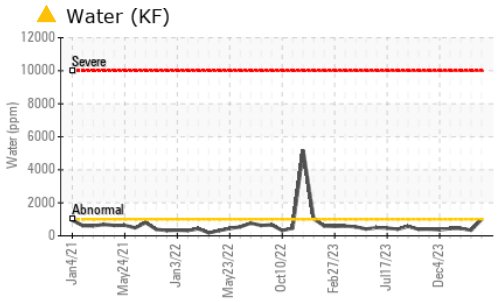
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>150	**16**	14	11
Chromium	ppm	ASTM D5185m	>10	**<1**	0	0
Nickel	ppm	ASTM D5185m	>10	**0**	0	0
Titanium	ppm	ASTM D5185m		**<1**	0	<1
Silver	ppm	ASTM D5185m		**0**	0	0
Aluminum	ppm	ASTM D5185m	>25	**2**	<1	<1
Lead	ppm	ASTM D5185m	>100	**0**	<1	0
Copper	ppm	ASTM D5185m	>50	**14**	13	11
Tin	ppm	ASTM D5185m	>10	**<1**	0	<1
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**<1**	0	0

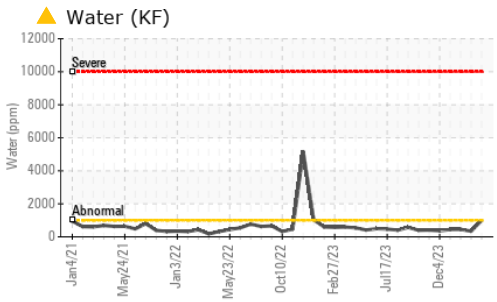
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**34**	29	28
Barium	ppm	ASTM D5185m		**<1**	0	0
Molybdenum	ppm	ASTM D5185m		**17**	16	15
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m		**240**	222	205
Calcium	ppm	ASTM D5185m		**3135**	2990	2759
Phosphorus	ppm	ASTM D5185m		**961**	942	841
Zinc	ppm	ASTM D5185m		**1099**	1028	916
Sulfur	ppm	ASTM D5185m		**7172**	7576	5841

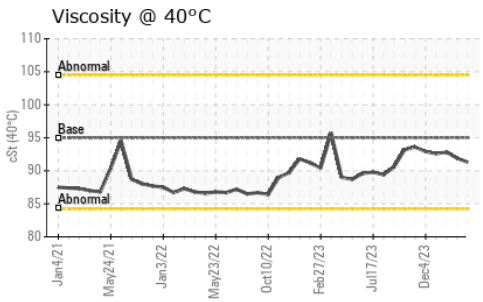
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**4**	4	4
Sodium	ppm	ASTM D5185m		**<1**	2	2
Potassium	ppm	ASTM D5185m	>20	**2**	0	0
Water	%	ASTM D6304	>0.1	▲ **0.100**	0.033	0.045
ppm Water	ppm	ASTM D6304	>1000	▲ **1000**	339	451

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		▲ **2.19**	0.89	1.13

OIL ANALYSIS REPORT



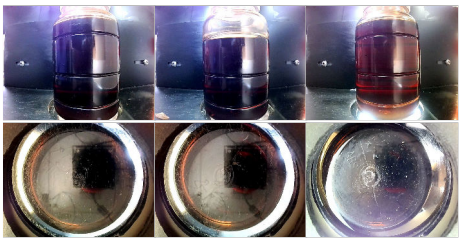




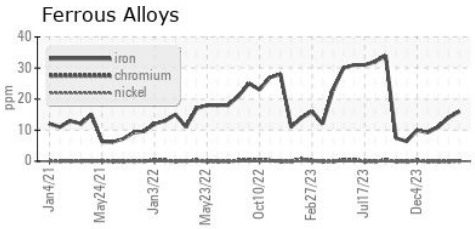
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	**0.2%**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

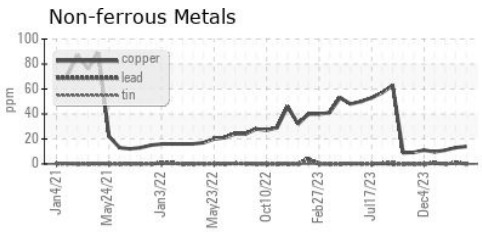
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	95.0	**91.3**	91.9	92.8

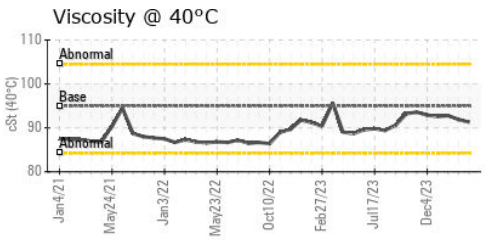
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

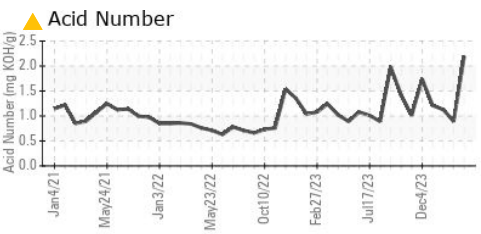


GRAPHS









Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0804765 **Received** : 06 Jun 2024
Lab Number : 06201560 **Tested** : 10 Jun 2024
Unique Number : 11063683 **Diagnosed** : 10 Jun 2024 - Angela Borella
Test Package : IND 2 (Additional Tests: KF, PQ)

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)

MARATHON PETROLEUM CO.
101 12TH ST
CATLETTSBURG, KY
US 41169
Contact: CORY GUMBERT
cagumbert@marathonpetroleum.com
T: (606)585-3950
F: x:

Report Id: MARCAT [WUSCAR] 06201560 (Generated: 06/10/2024 13:49:25) Rev: 1

Submitted By: M/V DETROIT