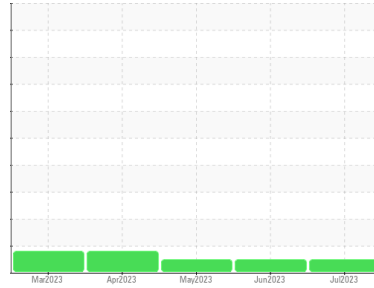




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Huntington
 Machine Id
[Huntington] Oil - Starboard Genset
 Component
Starboard Genset
 Fluid
DIESEL ENGINE OIL SAE 15W40 (5 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		WC0769144	WC0735499	WC0769220
Sample Date	Client Info		08 Jul 2023	13 Jun 2023	24 May 2023
Machine Age	hrs	Client Info	15277	14402	14402
Oil Age	hrs	Client Info	0	14402	14402
Oil Changed	Client Info		N/A	N/A	N/A
Sample Status			NORMAL	NORMAL	NORMAL

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	>25	17	14	8
Chromium	ppm	ASTM D5185m	>5	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	<1	5
Lead	ppm	ASTM D5185m	>10	27	25	24
Copper	ppm	ASTM D5185m	>20	5	5	2
Tin	ppm	ASTM D5185m	>5	0	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	250	81	112	89
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	86	87	79
Manganese	ppm	ASTM D5185m		<1	<1	0
Magnesium	ppm	ASTM D5185m	450	1254	1196	1176
Calcium	ppm	ASTM D5185m	3000	1441	1381	1263
Phosphorus	ppm	ASTM D5185m	1150	947	921	897
Zinc	ppm	ASTM D5185m	1350	1226	1139	1103
Sulfur	ppm	ASTM D5185m	4250	3710	3461	3533

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>25	4	3	4
Sodium	ppm	ASTM D5185m	>158	1	2	1
Potassium	ppm	ASTM D5185m	>20	<1	0	1

INFRA-RED

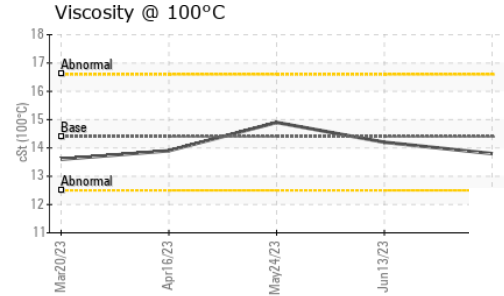
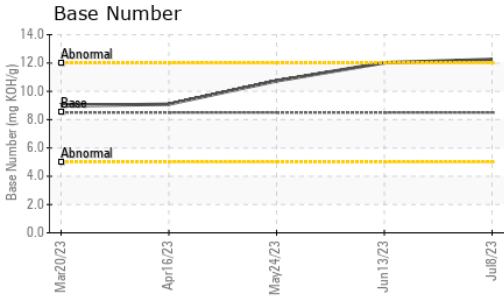
	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.3	0.2	0.2
Nitration	Abs/cm	*ASTM D7624	>20	8.8	8.2	6.6
Sulfation	Abs/.1mm	*ASTM D7415	>30	21.6	21.1	20.5

FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.7	16.6	15.9
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	12.25	12.02	10.74



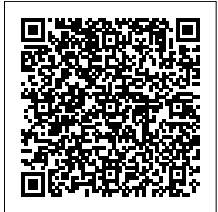
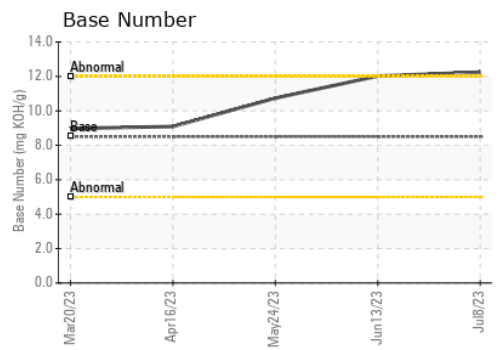
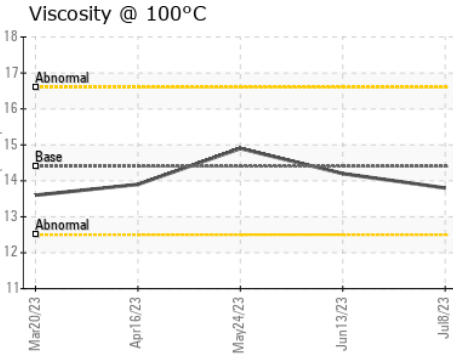
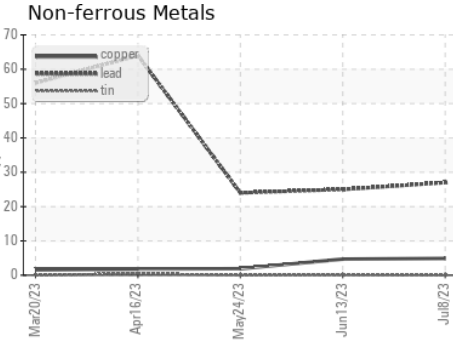
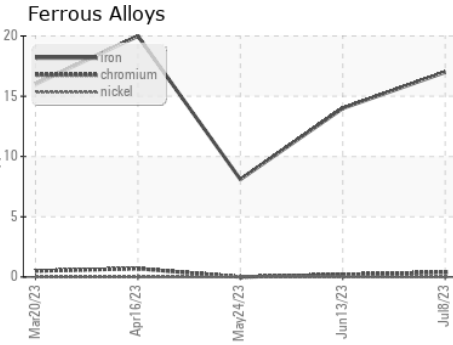
OIL ANALYSIS REPORT



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	13.8	14.2	14.9

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0769144 **Received** : 17 Jul 2023
Lab Number : **05900165** **Diagnosed** : 20 Jul 2023
Unique Number : 10561521 **Diagnostician** : Jonathan Hester
Test Package : IND 2

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 CATLETTSBURG, KY
 US 41169
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 cagumbert@marathonpetroleum.com
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Certificate L2367
 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)