

OIL ANALYSIS REPORT

Findlay Machine Id [Findlay] Oil - Starboard Genset

Starboard Genset

Marathon 15W40 (35 GAL)

Sample Rating Trend



Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

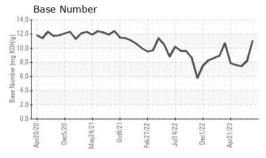
Fluid Condition

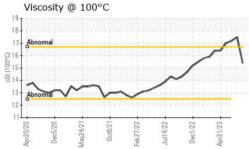
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0769017	WC0769466	WC0769464
Sample Date		Client Info		09 Aug 2023	15 Jul 2023	15 Jun 2023
Machine Age	hrs	Client Info		7115	6586	6340
Oil Age	hrs	Client Info		273	2964	2718
Oil Changed		Client Info		Filtered	Oil Added	Filtered
Sample Status				NORMAL	ATTENTION	NORMAL
CONTAMINATION	V	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	11	25	23
Chromium	ppm	ASTM D5185m	>5	<1	<1	1
Nickel	ppm	ASTM D5185m	>5	0	0	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>5	<1	0	<1
Aluminum	ppm	ASTM D5185m	>10	2	0	<1
Lead	ppm	ASTM D5185m	>10	<1	2	3
Copper	ppm	ASTM D5185m	>20	6	15	14
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	nnm	ASTM D5185m		^	0	0
Caumum	ppm	ASTIVI DOTOSITI		0	0	U
ADDITIVES	ррпп	method	limit/base	current	history1	history2
	ppm		limit/base			
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 41	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m ASTM D5185m	limit/base	current 41 0	history1 54 0	history2 54 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 41 0 47	history1 54 0 51	history2 54 0 48
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 41 0 47 <1	history1 54 0 51 <1	history2 54 0 48 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 41 0 47 <1 1118	history1 54 0 51 <1 982	history2 54 0 48 <1 954
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495	history1 54 0 51 <1 982 1855	history2 54 0 48 <1 954 1791
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040	history1 54 0 51 <1 982 1855 1062	history2 54 0 48 <1 954 1791 1075
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040 1301	history1 54 0 51 <1 982 1855 1062 1320	history2 54 0 48 <1 954 1791 1075 1389
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940	history1 54 0 51 <1 982 1855 1062 1320 3770	history2 54 0 48 <1 954 1791 1075 1389 4033
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940 current	history1 54 0 51 <1 982 1855 1062 1320 3770 history1	history2 54 0 48 <1 954 1791 1075 1389 4033 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base >25 >20	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4 2 2	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9 4	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base >25 >20 limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4 2 2 current	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9 4 history1	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4 2 2 current 0.2	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9 4 history1 0.3	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8 7 history2 0.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m method *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >20	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4 2 2 current 0.2 11.6	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9 4 history1 0.3 16.9	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8 7 history2 0.3 16.3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m method *ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	limit/base >25 >20 limit/base >20 >30	current 41 0 47 <1 1118 1495 1040 1301 3940 current 4 2 2 current 0.2 11.6 23.0	history1 54 0 51 <1 982 1855 1062 1320 3770 history1 5 9 4 history1 0.3 16.9 29.3	history2 54 0 48 <1 954 1791 1075 1389 4033 history2 7 8 7 history2 0.3 16.3 29.7



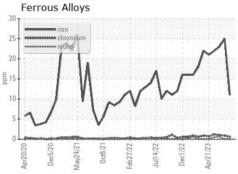
OIL ANALYSIS REPORT

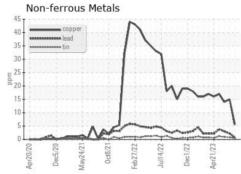


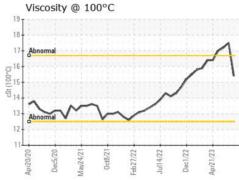


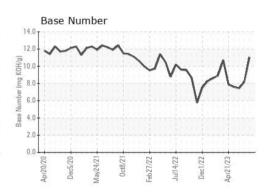
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

FLUID PROPER	RTIES	method			history2
Visc @ 100°C	cSt	ASTM D445	15.4	△ 17.5	17.2













Certificate L2367

Laboratory Sample No. Test Package : IND 2

Lab Number **Unique Number**

: WC0769017 : 05927450 : 10607397

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Aug 2023 : 18 Aug 2023 Diagnosed Diagnostician : Angela Borella

MARATHON PETROLEUM CO.

101 12TH ST CATLETTSBURG, KY

US 41169 Contact: SHAWN MCCLASKEY

stmcclaskey@marathonpetroleum.com T: (606)739-2416

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)

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