

OIL ANALYSIS REPORT

Area **Ohio** Valley [Ohio Valley] Oil - Starboard Reduction Gear

Starboard Reduction Gear

Fluid **GEAR OIL SAE 85W140 (180 GAL)**

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

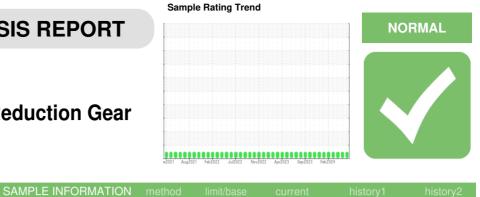
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

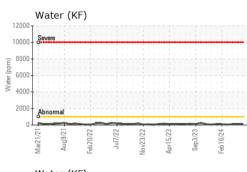
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

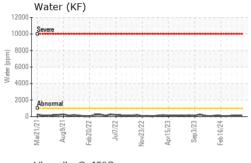


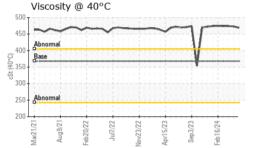
Sample Number		Client Info		WC0846012	WC0719221	WC0845992
Sample Date		Client Info		06 Jun 2024	11 May 2024	11 Apr 2024
Machine Age	hrs	Client Info		26245	25973	25685
Oil Age	hrs	Client Info		26245	25973	25685
Oil Changed		Client Info		Not Changd	N/A	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>150	55	54	52
Chromium	ppm	ASTM D5185m	>10	0	<1	<1
Nickel	ppm	ASTM D5185m	>10	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>25	9	7	8
Lead	ppm	ASTM D5185m	>100	0	0	0
Copper	ppm	ASTM D5185m	>50	6	8	2
Tin	ppm	ASTM D5185m	>10	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES		method	iiiiii/base	Current	riistory i	TIStoryz
Boron	ppm	ASTM D5185m	400	19	18	16
	ppm ppm					
Boron		ASTM D5185m	400	19	18	16
Boron Barium	ppm	ASTM D5185m ASTM D5185m	400 200	19 0	18 0	16 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	400 200	19 0 2	18 0 1	16 0 <1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	19 0 2 2	18 0 1 <1	16 0 <1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12	19 0 2 2 0	18 0 1 <1 16	16 0 <1 <1 10 80 884
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 12 150	19 0 2 2 0 69	18 0 1 <1 16 65	16 0 <1 <1 10 80
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 12 150 1650	19 0 2 2 0 69 1013	18 0 1 <1 16 65 965	16 0 <1 <1 10 80 884
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 12 150 1650 125	19 0 2 2 0 69 1013 43 19100	18 0 1 <1 16 65 965 40	16 0 <1 <1 10 80 884 44
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500	19 0 2 2 0 69 1013 43 19100	18 0 1 <1 16 65 965 40 17639	16 0 <1 <1 10 80 884 44 16977
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500	19 0 2 2 0 69 1013 43 19100 current	18 0 1 <1 16 65 965 40 17639 history1	16 0 <1 <1 10 80 884 44 16977 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	400 200 12 12 150 1650 125 22500	19 0 2 2 0 69 1013 43 19100 current 10	18 0 1 <1 65 965 40 17639 history1 0	16 0 <1 <1 10 80 884 44 16977 history2 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500 limit/base >50	19 0 2 2 0 69 1013 43 19100 current 10 3	18 0 1 <1 65 965 40 17639 history1 0 2	16 0 <1 <1 10 80 884 44 16977 history2 8 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500 limit/base >50	19 0 2 2 0 69 1013 43 19100 <u>current</u> 10 3 38	18 0 1 <1 65 965 40 17639 history1 0 2 35	16 0 <1 (1 10 80 884 44 16977 history2 8 3 3 34
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500 limit/base >50 >20 >0.1	19 0 2 2 0 69 1013 43 19100 <u>current</u> 10 3 38 0.010 105	18 0 1 <1 65 965 40 17639 history1 0 2 35 0.008	16 0 <1 <1 10 80 884 44 16977 history2 8 3 3 34 0.008



OIL ANALYSIS REPORT

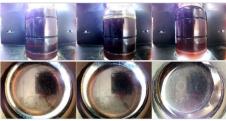






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	LIGHT	NONE	NONE
Sand/Dirt	scalar	*Visual	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 PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	368	469	473	474
SAMPLE IMAGES		method	limit/base	current	history1	history2

Color



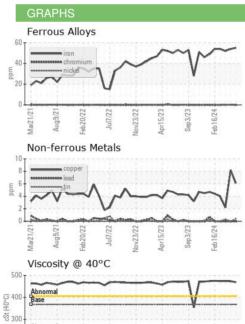
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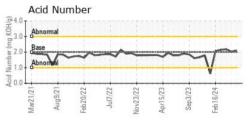
Abnorma

eb20/22

200

Mar21/21





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 MARATHON PETROLEUM CO. Sample No. : WC0846012 Received : 14 Jun 2024 101 12TH ST Lab Number : 06210215 Tested : 18 Jun 2024 CATLETTSBURG, KY Unique Number : 11083079 Diagnosed : 18 Jun 2024 - Sean Felton US 41169 Test Package : IND 2 (Additional Tests: KF) Contact: CORY GUMBERT Certificate 12367 cagumbert@marathonpetroleum.com To discuss this sample report, contact Customer Service at 1-800-237-1369. T: (606)585-3950 * - 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) F: x:

Apr15/23 .

Sen3/23

Feb 16/24

Report Id: MARCAT [WUSCAR] 06210215 (Generated: 06/22/2024 04:15:10) Rev: 1

Submitted By: M/V OHIO VALLEY

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