

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

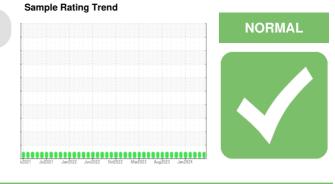
All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

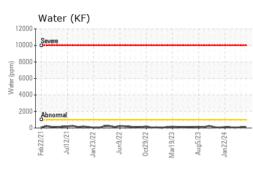
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

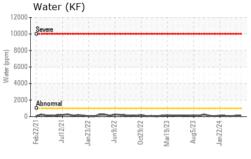


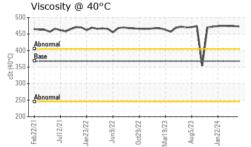
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0719221	WC0845992	WC0846056
Sample Date		Client Info		11 May 2024	11 Apr 2024	16 Mar 2024
Machine Age	hrs	Client Info		25973	25685	25422
Oil Age	hrs	Client Info		25973	25685	25422
Oil Changed		Client Info		N/A	Not Changd	N/A
Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>150	54	52	54
Chromium	ppm	ASTM D5185m	>10	<1	<1	0
Nickel	ppm	ASTM D5185m	>10	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>25	7	8	8
Lead	ppm	ASTM D5185m	>100	0	0	0
Copper	ppm	ASTM D5185m	>50	8	2	4
Tin	ppm	ASTM D5185m	>10	0	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 400	current 18	history1 16	history2 26
	ppm ppm					
Boron		ASTM D5185m	400	18	16	26
Boron Barium	ppm	ASTM D5185m ASTM D5185m	400 200	18 0	16 0	26 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	400 200	18 0 1	16 0 <1	26 0 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12	18 0 1 <1	16 0 <1 <1	26 0 0 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	400 200 12 12	18 0 1 <1 16	16 0 <1 <1 10	26 0 0 0 5
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	18 0 1 <1 16 65	16 0 <1 <1 10 80	26 0 0 0 5 42
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	18 0 1 <1 16 65 965	16 0 <1 <1 10 80 884	26 0 0 0 5 42 934
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	400 200 12 12 150 1650 125	18 0 1 <1 16 65 965 40	16 0 <1 <1 10 80 884 44	26 0 0 0 5 42 934 26
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	400 200 12 12 150 1650 125 22500	18 0 1 <1 16 65 965 40 17639	16 0 <1 <1 10 80 884 44 16977	26 0 0 5 42 934 26 16119
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	18 0 1 <1 65 965 40 17639 current	16 0 <1 <1 10 80 884 44 16977 history1	26 0 0 5 42 934 26 16119 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	400 200 12 12 150 1650 125 22500	18 0 1 <1 65 965 40 17639 current 0 2 35	16 0 <1 <1 10 80 884 44 16977 history1 8	26 0 0 5 42 934 26 16119 history2 9
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 ASTM D5185m ASTM D5185m	400 200 12 12 150 1650 125 22500 limit/base >50	18 0 1 <1 65 965 40 17639 current 0 2	16 0 <1 <1 10 80 884 44 16977 history1 8 3	26 0 0 5 42 934 26 16119 history2 9 2
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	400 200 12 12 150 1650 125 22500 Imit/base >50	18 0 1 <1 65 965 40 17639 current 0 2 35	16 0 <1 10 80 884 44 16977 history1 8 3 34	26 0 0 5 42 934 26 16119 history2 9 2 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	18 0 1 <1 65 965 40 17639 <u>current</u> 0 2 35 0.008	16 0 <1 (1 10 80 884 44 16977 history1 8 3 34 0.008	26 0 0 5 42 934 26 16119 history2 9 2 34 0.005



OIL ANALYSIS REPORT







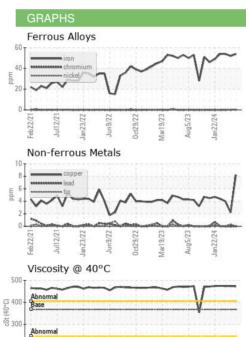
VISUAL		method	limit/base	current	history1	history2	
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	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 PROPERT	IES	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D445	368	473	474	474	
SAMPLE IMAGES	3	method	limit/base	current	history1	history2	
Color							

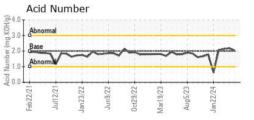


Bottom

200

Feb22/21





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 MARATHON PETROLEUM CO. Sample No. : WC0719221 Received : 16 May 2024 101 12TH ST Lab Number : 06181433 Tested : 17 May 2024 CATLETTSBURG, KY Unique Number : 11032759 Diagnosed : 20 May 2024 - Angela Borella 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:

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CC/600

Aug5/23

Mar19/23

Jan 22/24

Report Id: MARCAT [WUSCAR] 06181433 (Generated: 05/20/2024 10:23:01) Rev: 1

Submitted By: M/V OHIO VALLEY

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