

## **OIL ANALYSIS REPORT**

### Area Paul G. Blazer [Paul G. Blazer] 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		WC0845837	WC0845825	WC0845827
Sample Date		Client Info		09 Jul 2024	14 May 2024	14 Apr 2024
Machine Age	hrs	Client Info		7613	6739	6185
Oil Age	hrs	Client Info		7613	6739	6185
Oil Changed		Client Info		N/A	N/A	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>150	13	16	11
Chromium	ppm	ASTM D5185m	>10	0	<1	<1
Nickel	ppm	ASTM D5185m	>10	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m		0	1	0
Aluminum	ppm	ASTM D5185m	>25	2	4	2
Lead	ppm	ASTM D5185m	>100	0	<1	0
Copper	ppm	ASTM D5185m	>50	2	3	0
Tin	ppm	ASTM D5185m	>10	0	1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 400	current 40	history1 61	history2 62
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 400 200	current 40 0	history1 61 0	history2 62 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12	current 40 0 0	history1 61 0 1	history2 62 0 0
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12	current 40 0 0 0	history1 61 0 1 <1	history2 62 0 0 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12	current 40 0 0 0 4	history1 61 0 1 <1 2	history2 62 0 0 <1 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12 12 150	Current 40 0 0 0 4 9	history1 61 0 1 <1 2 18	history2 62 0 0 <1 3 11
ADDITIVES Boron Barium Molybdenum Maganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12 12 150 1650	Current 40 0 0 0 4 9 898	history1 61 0 1 <1 2 18 966	history2 62 0 0 <1 3 11 969
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12 12 150 1650 125	Current 40 0 0 0 4 9 898 0	history1 61 0 1 <1 2 18 966 10	history2           62           0                    11           969           6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12 12 150 1650 125 22500	Current 40 0 0 4 9 898 0 18044	history1           61           0           1           <1           2           18           966           10           19658	history2           62           0           <1           3           11           969           6           19590
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 400 200 12 12 150 1650 125 22500 limit/base	Current 40 0 0 0 4 9 898 0 18044 Current	history1         61         0         1         <1         2         18         966         10         19658         history1	history2           62           0              11           969           6           19590           history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm	method           ASTM D5185m	limit/base 400 200 12 12 150 1650 125 22500 limit/base >50	current           40           0           0           0           4           9           898           0           18044           current           4	history1         61         0         1         <1         2         18         966         10         19658         history1         6	history2         62         0            11         969         6         19590         history2         3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 4 ppm 4 ppm 4 ppm 4 ppm 4	method           ASTM D5185m	limit/base 400 200 12 12 150 1650 125 22500 limit/base >50	current           40           0           0           0           4           9           898           0           18044           current           4           2	history1         61         0         1         <1         2         18         966         10         19658         history1         6         1	history2         62         0            11         969         6         19590         history2         3         1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 3 ppm 4 ppm 4 ppm 2 ppm 1	method           ASTM D5185m	limit/base 400 200 12 12 12 150 1650 125 22500 limit/base >50 >20	current           40           0           0           0           4           9           898           0           18044           current           4           2           7	history1         61         0         1         <1         2         18         966         10         19658         history1         6         1         10	history2         62         0         -         3         11         969         6         19590         history2         3         1         99
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water	ppm	method           ASTM D5185m	limit/base 400 200 12 12 12 150 1650 125 22500 22500 kimit/base >50 >20 >0.1	current           40           0           0           0           4           9           898           0           18044           current           4           2           7           0.013	history1           61           0           1           <1           2           18           966           10           19658           history1           6           1           0           10           00           14           960           10           19658	history2           62           0              11           969           6           19590           history2           3           1           9           0.0006
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 3 ppm 4 ppm 4 ppm 2 ppm 4 ppm 4 ppm 2 ppm 4 ppm 4	method           ASTM D5185m           ASTM D6304           ASTM D6304	limit/base 400 200 12 12 150 1650 125 22500 limit/base >50 >20 >0.1 >1000	current           40           0           0           0           4           9           898           0           18044           2           7           0.013           140	history1         61         0         1         <1         2         18         966         10         19658         history1         6         1         0         0.014         144	history2         62         0         -         3         11         969         6         19590         history2         3         1         9         0.006         69
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water	ppm	method           ASTM D5185m           ASTM D5185m	limit/base 400 200 12 12 12 150 2500 >50 >0.1 >1000 limit/base	current           40           0           0           0           4           9           898           0           18044           2           7           0.013           140	history1         61         0         1         <1         2         18         966         10         19658         history1         6         1         00         0.014         144	history2         62         0         -         3         11         969         6         19590         history2         3         1         9         0.006         69         history2



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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	448	455	456
SAMPLE IMAGES	;	method	limit/base	current	history1	history2
Color						
Bottom						





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 MARATHON PETROLEUM CO. : WC0845837 Sample No. Received : 17 Jul 2024 101 12TH ST Lab Number : 06239205 Tested : 18 Jul 2024 CATLETTSBURG, KY Unique Number : 11128039 Diagnosed : 19 Jul 2024 - Don Baldridge 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:

Submitted By: M/V PAUL BLAZER

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