

OIL ANALYSIS REPORT

NORMA

Area Tampa Machine Id [Tampa] Oil - Port Main Engine Port Main Engine

Fluid MOBIL 15W40 (150 GAL)

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.

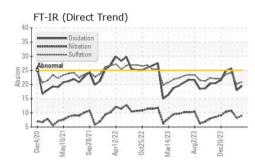
			NORMAL
ay2021	Sep2021 Apr2022	Oct2022 Mar2023 Aug2023 Dec2023	

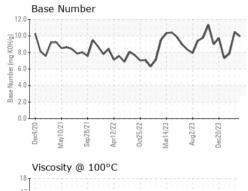
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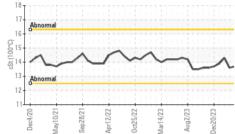
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0805301	WC0805293	WC0805286
Sample Date		Client Info		11 Apr 2024	13 Mar 2024	14 Feb 2024
Machine Age	hrs	Client Info		23200	6159	22046
Oil Age	hrs	Client Info		1225	1339	4000
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	1	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	>75	4	3	16
Chromium	ppm	ASTM D5185m	>8	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	2	3	1
Lead	ppm	ASTM D5185m	>18	0	<1	2
Copper	ppm	ASTM D5185m	>80	4	2	10
Tin	ppm	ASTM D5185m	>14	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		76	60	53
Barium	ppm	ASTM D5185m		0	0	0
Maluhdanu						
Molybdenum	ppm	ASTM D5185m		81	57	53
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m		81 <1	<1	<1
				-	<1 405	<1 584
Manganese Magnesium Calcium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m		<1 596 1571	<1 405 1131	<1 584 1738
Manganese Magnesium Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		<1 596	<1 405 1131 520	<1 584 1738 718
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		<1 596 1571 746 864	<1 405 1131 520 610	<1 584 1738 718 913
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		<1 596 1571 746	<1 405 1131 520	<1 584 1738 718
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	<1 596 1571 746 864	<1 405 1131 520 610	<1 584 1738 718 913
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	>20	<1 596 1571 746 864 3361 current 4	<1 405 1131 520 610 2285 history1 4	<1 584 1738 718 913 2563 history2 4
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20	<1 596 1571 746 864 3361 current	<1 405 1131 520 610 2285 history1 4 2	<1 584 1738 718 913 2563 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	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	>20 >118 >20	<1 596 1571 746 864 3361 <u>current</u> 4 2 2 <1	<1 405 1131 520 610 2285 history1 4 2 2 2	<1 584 1738 718 913 2563 history2 4 2 0
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	>20 >118 >20	<1 596 1571 746 864 3361 current 4 2	<1 405 1131 520 610 2285 history1 4 2	<1 584 1738 718 913 2563 history2 4 2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D6304	>20 >118 >20	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG current	<1 405 1131 520 610 2285 history1 4 2 2 2	<1 584 1738 718 913 2563 history2 4 2 0 NEG history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water	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	>20 >118 >20 >0.1	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG	<1 405 1131 520 610 2285 history1 4 2 2 2 NEG	<1 584 1738 718 913 2563 history2 4 2 0 NEG
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED	ppm	ASTM D5185m ASTM D6304	>20 >118 >20 >0.1 limit/base	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG current	<1 405 1131 520 610 2285 history1 4 2 2 NEG history1	<1 584 1738 718 913 2563 history2 4 2 0 NEG history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m	>20 >118 >20 >0.1 limit/base	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG current 0.2	<1 405 1131 520 610 2285 history1 4 2 2 NEG history1 0.1	<1 584 1738 718 913 2563 history2 4 2 0 NEG history2 0.4
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm % class/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D6304 ASTM D6304 *ASTM D7844	>20 >118 >20 >0.1 limit/base	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG current 0.2 9.1	<1 405 1131 520 610 2285 history1 4 2 2 NEG history1 0.1 8.1	<1 584 1738 718 913 2563 history2 4 2 0 NEG history2 0.4 10.8
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm % % % %	ASTM D5185m ASTM D51854 *ASTM D7824 *ASTM D7824	>20 >118 >20 >0.1 limit/base >20 >30	<1 596 1571 746 864 3361 <u>current</u> 4 2 <1 NEG current 0.2 9.1 20.9	<1 405 1131 520 610 2285 history1 4 2 2 NEG history1 0.1 8.1 20.1	<1 584 1738 718 913 2563 history2 4 2 0 NEG history2 0.4 10.8 24.2



OIL ANALYSIS REPORT







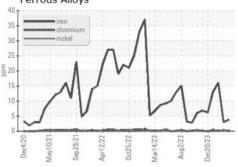
VISUAL		method	limit/base	current	history1	history2	
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	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 @ 100°C	cSt	ASTM D445		13.7	13.6	14.3	
GRAPHS							

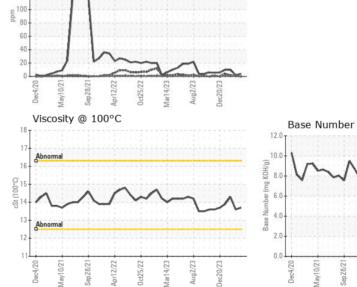
Ferrous Alloys

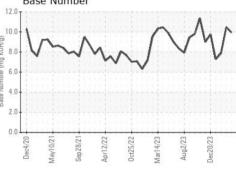
Non-ferrous Metals

180

160 140 120







Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 MARATHON PETROLEUM CO. : WC0805301 Sample No. Received : 23 Apr 2024 101 12TH ST Lab Number : 06157861 Tested : 25 Apr 2024 CATLETTSBURG, KY Unique Number : 10993284 Diagnosed : 25 Apr 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. F: x:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: MARCAT [WUSCAR] 06157861 (Generated: 04/25/2024 20:11:27) Rev: 1

Submitted By: M/V TAMPA

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