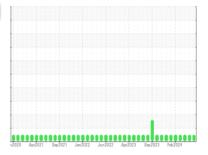


# **OIL ANALYSIS REPORT**

Mt. Vernon [Mt. Vernon] Oil - Port Main Engine

Port Main Engine

**DIESEL ENGINE OIL SAE 15W40 (250 GAL)** 



Sample Rating Trend



### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Ronnie Wilbanks )

All component wear rates are normal for time on oil.

### Contamination

There is no indication of any contamination in the

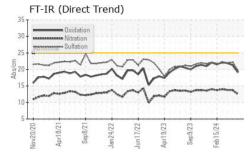
### **Fluid Condition**

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

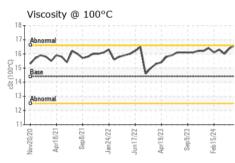
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0859774	WC0769046	WC0769041
Sample Date		Client Info		14 Jun 2024	18 May 2024	17 Apr 2024
Machine Age	hrs	Client Info		13389	12735	12030
Oil Age	hrs	Client Info		13389	12735	12030
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	١	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	33	32	32
Chromium	ppm	ASTM D5185m	>8	2	2	2
Nickel	ppm	ASTM D5185m	>2	1	0	1
Titanium	ppm	ASTM D5185m	>3	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>15	6	5	5
Lead	ppm	ASTM D5185m	>18	35	33	34
Copper	ppm	ASTM D5185m	>80	81	74	80
Tin	ppm	ASTM D5185m	>14	17	16	17
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES			12 24 /		11.	la la la con O
ADDITIVES		method				history2
Boron	ppm	ASTM D5185m	250	current 4	history1 <1	nistory2 0
	ppm ppm					
Boron		ASTM D5185m	250	4	<1	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	4 0	<1	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	4 0 3	<1 0 2	0 0 2
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	4 0 3 <1	<1 0 2 <1	0 0 2 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	4 0 3 <1 29	<1 0 2 <1 30	0 0 2 <1 15
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	4 0 3 <1 29 3567	<1 0 2 <1 30 3413	0 0 2 <1 15 3362
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	4 0 3 <1 29 3567 22	<1 0 2 <1 30 3413 27	0 0 2 <1 15 3362 42
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	250 10 100 450 3000 1150	4 0 3 <1 29 3567 22	<1 0 2 <1 30 3413 27 27	0 0 2 <1 15 3362 42 27
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	250 10 100 450 3000 1150 1350 4250	4 0 3 <1 29 3567 22 22 5425	<1 0 2 <1 30 3413 27 27 5209	0 0 2 <1 15 3362 42 27 5112
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base	4 0 3 <1 29 3567 22 22 5425	<1 0 2 <1 30 3413 27 27 5209 history1	0 0 2 <1 15 3362 42 27 5112 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20	4 0 3 <1 29 3567 22 22 5425 current	<1 0 2 <1 30 3413 27 27 5209 history1	0 0 2 <1 15 3362 42 27 5112 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20	4 0 3 <1 29 3567 22 22 5425 current 7	<1 0 2 <1 30 3413 27 27 5209 history1 5	0 0 2 <1 15 3362 42 27 5112 history2 6 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20	4 0 3 <1 29 3567 22 22 5425 current 7 5	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0	0 0 2 <1 15 3362 42 27 5112 history2 6 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 >0.1	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG	0 0 2 <1 15 3362 42 27 5112 history2 6 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 >0.1 limit/base	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG current	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG	0 0 2 <1 15 3362 42 27 5112 history2 6 2 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 >0.1 limit/base	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG history1 0.5	0 0 2 <1 15 3362 42 27 5112 history2 6 2 NEG history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304  method  *ASTM D7844  *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 >0.1 limit/base	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG current 0.5 12.5	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG history1 0.5 13.7	0 0 2 <1 15 3362 42 27 5112 history2 6 2 2 NEG history2 0.4 13.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304  *ASTM D7844  *ASTM D7844  *ASTM D7844  *ASTM D7844	250 10 100 450 3000 1150 1350 4250 limit/base >20 >158 >20 >0.1 limit/base	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG current 0.5 12.5 19.6 current	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG history1 0.5 13.7 22.2 history1	0 0 2 <1 15 3362 42 27 5112 history2 6 2 NEG history2 0.4 13.8 22.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304  method *ASTM D7844 *ASTM D7624 *ASTM D7624	250 10 100 450 3000 1150 1350 4250 limit/base >20 >0.1 limit/base >20 >30 limit/base	4 0 3 <1 29 3567 22 22 5425 current 7 5 2 NEG current 0.5 12.5 19.6	<1 0 2 <1 30 3413 27 27 5209 history1 5 4 0 NEG history1 0.5 13.7 22.2	0 0 2 <1 15 3362 42 27 5112 history2 6 2 2 NEG history2 0.4 13.8 22.0

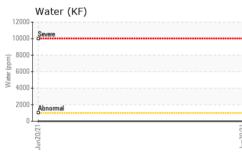


## **OIL ANALYSIS REPORT**



12000	Water (KF)
10000	Severe
€ 8000	
Water (ppm)	
4000	
2000	Abnormal
0	Jun20/21
	ul.

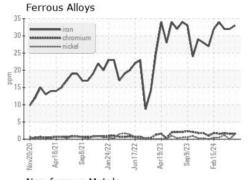


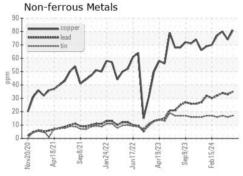


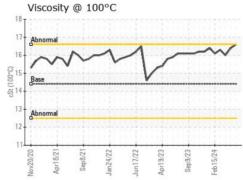
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	LIGHT	LIGHT
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

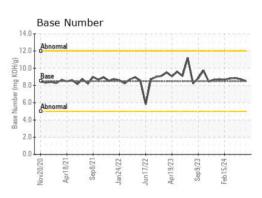
FLUID PROPER	TIES	method				history2
Visc @ 100°C	cSt	ASTM D445	14.4	16.6	16.4	16.0

### **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06219909

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0859774 Unique Number : 11098106

Received **Tested** Diagnosed

: 25 Jun 2024 : 26 Jun 2024

: 26 Jun 2024 - Sean Felton

101 12TH ST CATLETTSBURG, KY US 41169 Contact: CORY GUMBERT

MARATHON PETROLEUM CO.

Test Package : IND 2 ( Additional Tests: KF ) 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.

cagumbert@marathonpetroleum.com T: (606)585-3950 F: x:

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: MARCAT [WUSCAR] 06219909 (Generated: 06/30/2024 15:38:30) Rev: 1

Submitted By: M/V MT VERNON