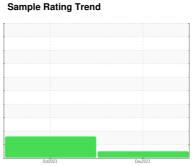


# **OIL ANALYSIS REPORT**







Machine Id Component **Diesel Engine** 

PARTS MASTER FULL SYN SAE 30 (--- GA

## Recommendation

Resample at the next service interval to monitor.

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.

WEAR METALS	L)			0cd2023	Dec2023		
Sample Date   Client Info   27 Dec 2023   31 Oct 2023	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date   Client Info   27 Dec 2023   31 Oct 2023	Sample Number		Client Info		WC0871813	WC0819766	
Machine Age         mls         Client Info         5000         6170            Oil Age         mls         Client Info         5000         6170            Oil Changed         Client Info         NVA         N/A            Sample Status         NORMAL         ABNORMAL            CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0			Client Info		27 Dec 2023	31 Oct 2023	
Oil Age         mls         Client Info         5000         6170            Oil Changed         Client Info         N/A         N/A         N/A            Sample Status         Client Info         N/A         N/A         N/A            CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0            Water         WC Method         >0.2         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         22         37            Ohromium         ppm         ASTM D5185m         >20         <1         <1            Uncolor Dept         ASTM D5185m         >3         0         0            Chromium         ppm         ASTM D5185m         >3         0         0            Intanium         ppm         ASTM D5185m         >4         <1         0            Itanium	•	mls	Client Info		11404	6170	
Oil Changed Sample Status         Client Info         N/A         N/A         N/A            CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0            Water         WC Method         >0.2         NEG         NEG            Glycol         WC Method         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         22         37            Chromium         ppm         ASTM D5185m         >20         <1         <1            Nickel         ppm         ASTM D5185m         >20         <1         <1            Silver         ppm         ASTM D5185m         >3         0         0            Silver         ppm         ASTM D5185m         >30         14         46            Copper         ppm         ASTM D5185m         >330         14         46            Ti		mls	Client Info		5000	6170	
CONTAMINATION	-					N/A	
Fuel   WC Method   S5   <1.0   <1.0	-				NORMAL	ABNORMAL	
Water Glycol         WC Method WC Method         >0.2         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         22         37            Chromium         ppm         ASTM D5185m         >20         <1         <1            Nickel         ppm         ASTM D5185m         >4         <1         0            Nickel         ppm         ASTM D5185m         >4         <1         0            Silver         ppm         ASTM D5185m         >20         7         9            Aluminum         ppm         ASTM D5185m         >20         7         9            Lead         ppm         ASTM D5185m         >20         7         9            Lead         ppm         ASTM D5185m         >330         14         46            Tin         ppm         ASTM D5185m         >30         1         1            Copper         ppm         ASTM D5185m         0         0         <1	CONTAMINATIO	N	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	
Iron	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	22	37	
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	
Stiver	Nickel	ppm	ASTM D5185m	>4	<1	0	
Aluminum         ppm         ASTM D5185m         >20         7         9            Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m		<1	<1	
Lead         ppm         ASTM D5185m         >40         <1	Silver	ppm	ASTM D5185m	>3	0	0	
Lead         ppm         ASTM D5185m         >40         <1	Aluminum		ASTM D5185m	>20	7	9	
Copper         ppm         ASTM D5185m         >330         14         46            Tin         ppm         ASTM D5185m         >15         1         1            Vanadium         ppm         ASTM D5185m         0         <1	Lead			>40	<1		
Tin         ppm         ASTM D5185m         >15         1         1            Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         c1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         25         19            Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history							
Vanadium         ppm         ASTM D5185m         0         <1            Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         25         19            Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         1767         1708            Sulfur         ppm         ASTM D5185m         >25         29         82            CONTAMINANTS         method         limit/base         current         hi	• •						
Cadmium         ppm         ASTM D5185m         <1         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         25         19            Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29				710			
Boron         ppm         ASTM D5185m         25         19            Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Zinc         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         82            Sodium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         <					-		
Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         82            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         20         3         7            INFRA-RED         method         limit/base         curre	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0            Molybdenum         ppm         ASTM D5185m         264         152            Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         82            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         20         3         7            INFRA-RED         method         limit/base         curre	Boron	ppm	ASTM D5185m		25	19	
Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         482            Sodium         ppm         ASTM D5185m         >20         3         7            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7844         >3         0         0            Nitration         Abs/:nm	Barium	ppm	ASTM D5185m		0	0	
Manganese         ppm         ASTM D5185m         2         3            Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         ▲ 82            Sodium         ppm         ASTM D5185m         >20         3         7            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.7         11.2            Sulfation	Molybdenum	ppm	ASTM D5185m		264	152	
Magnesium         ppm         ASTM D5185m         478         464            Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         ▲ 82            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/:nm         *ASTM D7624         >20         10.7         11.2            Sulfation	Manganese		ASTM D5185m		2	3	
Calcium         ppm         ASTM D5185m         1329         1252            Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         82            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/.mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2			ASTM D5185m		478	464	
Phosphorus         ppm         ASTM D5185m         610         636            Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         82            Sodium         ppm         ASTM D5185m         >20         3         7            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1			ASTM D5185m		1329	1252	
Zinc         ppm         ASTM D5185m         814         800            Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         482            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17							
Sulfur         ppm         ASTM D5185m         1767         1708            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         29         482            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Silicon         ppm         ASTM D5185m         >25         29         ▲ 82            Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	-						
Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	CONTAMINANTS	S	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         0         6            Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	Silicon	ppm	ASTM D5185m	>25	29	<b>▲</b> 82	
Potassium         ppm         ASTM D5185m         >20         3         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42			ASTM D5185m				
Soot %         %         *ASTM D7844         >3         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42			ASTM D5185m	>20			
Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         10.7         11.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	Soot %	%	*ASTM D7844	>3	0	0	
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.2         21.0            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42	Nitration	Abs/cm	*ASTM D7624	>20	10.7	11.2	
Oxidation         Abs/.1mm         *ASTM D7414         >25         16.9         17.5            Acid Number (AN)         mg KOH/g         ASTM D8045         1.42							
Acid Number (AN) mg KOH/g ASTM D8045 1.42	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
, , , , ,	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.9	17.5	
, , , , , , , , , , , , , , , , , , , ,	Acid Number (AN)	mg KOH/g	ASTM D8045		1.42		
	Base Number (BN)	mg KOH/g				5.35	



# **OIL ANALYSIS REPORT**







Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** 

: WC0871813 : 06055006 : 10820955

Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : 08 Jan 2024 Recieved : 11 Jan 2024

Diagnosed : Jonathan Hester Diagnostician

US 24944 Contact: SERVICE MANAGER meckmechanic@frontier.com

T: (304)456-4541 F: (304)456-4540

GREEN BANK, WV

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. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) PO BOX 4