

# **OIL ANALYSIS REPORT**





Sample Rating Trend



### DIAGNOSIS

#### Recommendation

We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the

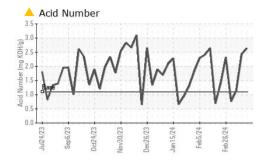
### Fluid Condition

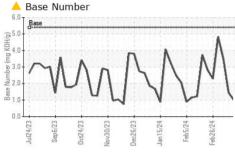
The BN level is low. The AN level is at the top-end of the recommended limit.

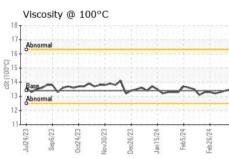
Sample Number         Client Info         WC0895534         WC0895550         WC0895550         WC0895550         WC0895550         WC0895550         WC089555         WC0895550         WC0895550         WC0895550         WC089550         WC08950         At 11 Mar 2024         41 Mar 2024         41 Mar 2024         44088         At 4232         44088         At 4231         44232         44088         At 500         At 500         At 500         At 500         At 500         At 500         At 644         At 500         At 644         At 500         At 644	ENGINE OIL 40 (-	GAL)	  2023 Sep20	23 Oct2023 Nov2023	Dec2023 Jan2024 Feb2024	Feb2024	
Sample Date   Client Info   18 Mar 2024   11 Mar 2024   408   408   4314   44232   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   44088   4	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   726   644   500   Age   hrs   Client Info   726   644   500   Age   hrs   Client Info   726   644   500   Not Changd   Not Changd   ABNORMAL   Not Changd   ABNORMAL   ABNORM	Sample Number		Client Info		WC0895534	WC0895550	WC0895547
Dil Age	Sample Date		Client Info		18 Mar 2024	11 Mar 2024	05 Mar 2024
Contamination   Contaminatio	Machine Age	hrs	Client Info		44314	44232	44088
ABNORMAL   ABNORMAL   ABNORMAL   CONTAMINATION   method   limit/base   current   history1   history1   history2   history3   with the content	Oil Age	hrs	Client Info		726	644	500
CONTAMINATION	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Fuel	Sample Status				ABNORMAL	ABNORMAL	NORMAL
Water Glycol         WC Method WC Method         >0.1         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >15         7         3         <1	CONTAMINATION	J	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         histor           ron         ppm         ASTM D5185m         >15         7         3         <1	<i>N</i> ater		WC Method	>0.1	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Sickel	ron	ppm	ASTM D5185m	>15	7	3	<1
Description	Chromium	ppm	ASTM D5185m	>4	0	<1	0
Saliver	Nickel	ppm	ASTM D5185m	>2	0	<1	0
Aluminum   ppm   ASTM D5185m   >6   1   2   1   Lead   ppm   ASTM D5185m   >9   1   2   <1   Copper   ppm   ASTM D5185m   >6   0   <1   Copper   ppm   ASTM D5185m   >6   0   Codmium   ppm   ASTM D5185m   >4   1   2   <1   Codmium   ppm   ASTM D5185m   0   0   0   Codelium   ppm   ASTM D5185m   0   0   0   Collium   ppm   ASTM D5185m   0   0   0   Collium   ppm   ASTM D5185m   1945   1726   1784   Collium   ppm   ASTM D5185m   282   273   264   Collium   ppm   ASTM D5185m   346   325   297   Collium   ppm   ASTM D5185m   346   325   297   Contaminants   ppm   ASTM D5185m   346   325   297   Contaminants   ppm   ASTM D5185m   340   3690   2749   Contaminants   ppm   ASTM D5185m   >110   88   44   Colassium   ppm   ASTM D5185m   >20   0   2   0   Contaminants   ppm   ASTM D5185m   >20   0   2   0   Contaminants   ppm   ASTM D5185m   >20   0   2   0   Contaminants   ppm   ASTM D5185m   >20   5.1   5.1   5.0   Coldation   Abs/.1mm   'ASTM D7844   >20   5.1   5.1   5.0   Coldation   Abs/.1mm   'ASTM D7845   >20   5.1   5.1   5.0   Contaminants   ppm   ASTM D7844   >20   5.1   5.1   5.0   Cont	Γitanium	ppm	ASTM D5185m		0	<1	0
Lead         ppm         ASTM D5185m         >9         1         2            Copper         ppm         ASTM D5185m         >6         0         <1         0           Copper         ppm         ASTM D5185m         >6         0         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history           Boron         ppm         ASTM D5185m         0         1         0           Boron         ppm         ASTM D5185m         0         1         0           Boron         ppm         ASTM D5185m         0         2         -1         0           Boron         ppm         ASTM D5185m         0         -1         0         0         0         0           Boron         ppm         ASTM D5185m         0         -1         0         -1         0         0         0         0         0         17         4         0         1         0	Silver	ppm	ASTM D5185m	>5	0	0	0
Copper	Aluminum	ppm	ASTM D5185m	>6	1	2	1
Fin	_ead	ppm	ASTM D5185m	>9	1	2	<1
Acid Number (AN)   MSKM D5185m   Part Number (An)   Part Number (An	Copper	ppm	ASTM D5185m	>6	0	<1	0
Analdium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         1         0           Barium         ppm         ASTM D5185m         0         0         0           Magnese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         4         7         4           Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Picinc         ppm         ASTM D5185m         346         325         297           Bulfur         ppm         ASTM D5185m         346         325         297           CONTAMINANTS         method         limit/base         current         history1         history1           Rodium         ppm         ASTM D5185m         >181         110         88	• •		ASTM D5185m	>4	1	2	<1
ADDITIVES  method limit/base current history1 history  Boron ppm ASTM D5185m 0 1 0  Molybdenum ppm ASTM D5185m 0 2 < <1  Manganese ppm ASTM D5185m 0 < 1 0  Magnesium ppm ASTM D5185m 0 < <1 0  Magnesium ppm ASTM D5185m 4 7 4  Calcium ppm ASTM D5185m 1945 1726 1784  Phosphorus ppm ASTM D5185m 282 273 264  Zinc ppm ASTM D5185m 346 325 297  Sulfur ppm ASTM D5185m 346 325 297  Sulfur ppm ASTM D5185m 346 325 297  CONTAMINANTS method limit/base current history1 history  Contassium ppm ASTM D5185m < 1 0 <1  Potassium ppm ASTM D5185m >181 110 88 44  Sodium ppm ASTM D5185m < 1 0 <1  Potassium ppm ASTM D5185m >20 0 2 0  INFRA-RED method limit/base current history1 history  Soot % % "ASTM D7844 0.1 0.1 0.1 0  Mitration Abs/cm "ASTM D7844 >20 5.1 5.1 5.0  Sulfation Abs/1mm "ASTM D7415 >30 26.1 24.8 19.6  FLUID DEGRADATION method limit/base current history1 history  Dxidation Abs/1mm "ASTM D7414 >25 14.1 13.7 9.8  Acid Number (AN) mg KOHlg ASTM D8045 1.1 △ 2.64 △ 2.43 1.15	/anadium		ASTM D5185m		0	0	0
Boron   ppm   ASTM D5185m   0	Cadmium	ppm	ASTM D5185m		0	0	0
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         2         <1           Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         4         7         4           Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           Godium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7414         >20         5.1         5.1         5.0           Sulfation         Abs/.1mm <th< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td>1</td><td>0</td></th<>	Boron	ppm	ASTM D5185m		0	1	0
Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         4         7         4           Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           Potassium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history1           Soot % <th< td=""><td>Barium</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td>0</td><td>0</td></th<>	Barium	ppm	ASTM D5185m		0	0	0
Manganese         ppm         ASTM D5185m         0         <1         0           Magnesium         ppm         ASTM D5185m         4         7         4           Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           Codium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         *A	Molybdenum	ppm	ASTM D5185m		0	2	<1
Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Soliicon         ppm         ASTM D5185m         >181         110         88         44           Sodium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         0.1         0.1         0           Sulfration         Abs/cm         *ASTM D7624         >20         5.1         5.1         5.0           Sulfration         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history1 <th< td=""><td>-</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td>&lt;1</td><td>0</td></th<>	-	ppm	ASTM D5185m		0	<1	0
Calcium         ppm         ASTM D5185m         1945         1726         1784           Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           Godium         ppm         ASTM D5185m         >20         0         2         0           Potassium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         0.1         0.1         0           Sulfration         Abs/cm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history1	Magnesium	ppm	ASTM D5185m		4	7	4
Phosphorus         ppm         ASTM D5185m         282         273         264           Zinc         ppm         ASTM D5185m         346         325         297           Sulfur         ppm         ASTM D5185m         4304         3690         2749           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >181         110         88         44           Sodium         ppm         ASTM D5185m         >181         110         88         44           Potassium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history           Soot %         %         *ASTM D7844         0.1         0.1         0           Sulfation         Abs/.1mm         *ASTM D7624         >20         5.1         5.1         5.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history	-	ppm	ASTM D5185m		1945	1726	1784
Sulfur   ppm   ASTM D5185m   346   325   297	Phosphorus		ASTM D5185m		282	273	264
CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >181         110         88         44           Sodium         ppm         ASTM D5185m         <1			ASTM D5185m		346	325	297
Solition   ppm   ASTM D5185m   >181   110   88   44	Sulfur		ASTM D5185m		4304	3690	2749
Sodium	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium	Silicon	ppm	ASTM D5185m	>181	110	88	44
Potassium         ppm         ASTM D5185m         >20         0         2         0           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         0.1         0.1         0           Nitration         Abs/cm         *ASTM D7624         >20         5.1         5.1         5.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         2.64         2.43         1.15	Sodium		ASTM D5185m		<1	0	<1
Goot %         %         *ASTM D7844         0.1         0.1         0           Nitration         Abs/cm         *ASTM D7624         >20         5.1         5.1         5.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history1         history           Dxidation         Abs/.1mm         *ASTM D7414         >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         2.64         2.43         1.15	Potassium		ASTM D5185m	>20	0	2	0
Nitration         Abs/cm         *ASTM D7624         >20         5.1         5.0           Sulfation         Abs/.1mm         *ASTM D7615         >30         26.1         24.8         19.6           FLUID DEGRADATION method limit/base current history1         history1         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         △ 2.64         △ 2.43         1.15	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         5.1         5.0           Sulfation         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION method limit/base current history1         history1         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         △ 2.64         △ 2.43         1.15	Soot %	%	*ASTM D7844		0.1	0.1	0
Sulfation         Abs/.1mm         *ASTM D7415         >30         26.1         24.8         19.6           FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         △ 2.64         △ 2.43         1.15		Abs/cm		>20			5.0
Dxidation         Abs/.1mm         *ASTM D7414 >25         14.1         13.7         9.8           Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         2.64         2.43         1.15				>30			
Acid Number (AN)         mg KOH/g         ASTM D8045         1.1         ▲ 2.64         ▲ 2.43         1.15	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)   mg KOH/g   ASTM D8045   1.1   ▲ 2.64   ▲ 2.43   1.15	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	13.7	9.8
2000 PROTECT COLUMN TO DESCRIPTORO (2.5)	Base Number (BN)	mg KOH/g	ASTM D2896	5.4	<u> </u>	<u> 1.45</u>	3.50



## **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
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
ELLID DDODEDTIES		use a the seal	line it /le e e e		la i a t a m o d	la i a ta w . O
FLUID PROPERTIES		method	limit/base	current	history1	history2

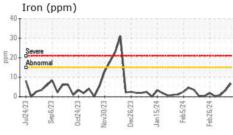
Visc @ 100°C	cSt	AST
CDADHS		

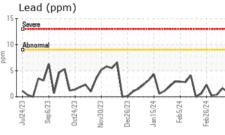
ASTM D445 13.4

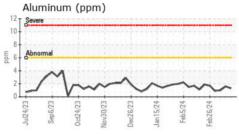
13.5

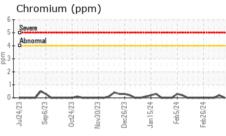
13.4

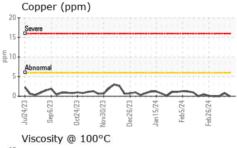
13.3

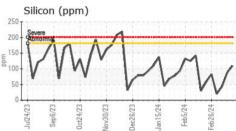


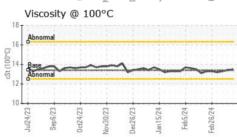


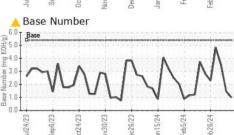
















Certificate L2367

Laboratory Sample No.

Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0895534 Lab Number : 06123878

Unique Number: 10938029

Received **Tested** Diagnosed

: 20 Mar 2024 : 21 Mar 2024

: 22 Mar 2024 - Don Baldridge

**EDL NA Recips-Watervliet** Watervliet Powerstation, 3563 Hennessey Road

Watervliet, MI US 49098

Contact: Scott Eastman

scott.eastman@edlenergy.com T:

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)

Report Id: EDLWAT [WUSCAR] 06123878 (Generated: 03/22/2024 19:58:23) Rev: 1

Submitted By: Scott Eastman

F: