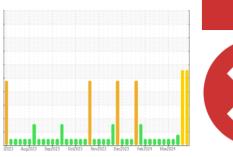


# **OIL ANALYSIS REPORT**





Sample Rating Trend



## DIAGNOSIS

### Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

#### 🔔 Wear

The tin level is abnormal. All other component wear rates are normal.

## Contamination

Elemental level of silicon (Si) above normal.

### **Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid.

Sample Number   Client Info   WC0865739   WC0865695   WC0858mple Date   Client Info   16 Apr 2024   11 Apr 2024   04 Apr 2014   14 Apr 2024   11 Apr 2024   04 Apr 2014   11 Apr 2024   12 Apr 2024	ENGINE OIL 40 (-	GAL)	12023 Aug 20	23 Sep 2023 Oct2023	Nov2023 Dec2023 Feb2024	Mar2024	
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   116109   115822   115822   11582   101 Age   hrs   Client Info   1025   905   738	Sample Number		Client Info		WC0865739	WC0865695	WC0865726
Dil Age	Sample Date		Client Info		16 Apr 2024	11 Apr 2024	04 Apr 2024
Dil Changed   Cilient Info   Severe   Severe   ABNO   Severe   Severe   ABNO   Severe   Severe   ABNO   Severe   Severe   ABNO   ABN	Machine Age	hrs	Client Info		116109	115822	115822
SEVERE   SEVERE   SEVERE   ABNOC   CONTAMINATION   method   limit/base   current   history1   hi	Oil Age	hrs	Client Info		1025	905	738
CONTAMINATION	Oil Changed		Client Info		Changed	Not Changd	Not Changd
Water	Sample Status				SEVERE	SEVERE	ABNORMAL
Water Glycol         WC Method         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >14         3         4         1           Chromium         ppm         ASTM D5185m         >3         <1	CONTAMINATION	N	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method		NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>14	3	4	1
Citanium         ppm         ASTM D5185m         0         0         0           Aluminum         ppm         ASTM D5185m         0         0         0           Aluminum         ppm         ASTM D5185m         >5         1         1         1           Lead         ppm         ASTM D5185m         >8         2         1         1           Copper         ppm         ASTM D5185m         >5         4         6         5           Fin         ppm         ASTM D5185m         >3         5         2         4         4           Vanadium         ppm         ASTM D5185m         0         <1         0         C           Zadmium         ppm         ASTM D5185m         0         <1         0         C           ADDITIVES         method         limit/base         current         history1         hi           Boron         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         5         5         4           Magnesium <t< td=""><td>Chromium</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;3</td><td>&lt;1</td><td>&lt;1</td><td>0</td></t<>	Chromium	ppm	ASTM D5185m	>3	<1	<1	0
Silver	Nickel	ppm	ASTM D5185m		0	<1	0
Aluminum   ppm   ASTM D5185m   >5   1   1   1   1   1   1   1   1   1	Titanium	ppm	ASTM D5185m		0	0	0
Aluminum         ppm         ASTM D5185m         >5         1         1         1         1           Lead         ppm         ASTM D5185m         >8         2         1         1           Copper         ppm         ASTM D5185m         >5         4         6         5           Tin         ppm         ASTM D5185m         >3         5         2         4         4           Vanadium         ppm         ASTM D5185m         0         <1	Silver	ppm	ASTM D5185m		0	0	0
Lead         ppm         ASTM D5185m         >8         2         1         1           Copper         ppm         ASTM D5185m         >5         4         6         5           Tin         ppm         ASTM D5185m         >5         4         6         5           Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         hi           Boron         ppm         ASTM D5185m         4         1         2           Barium         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         5         5         4           Manganese         ppm         ASTM D5185m         26         20         27           Calcium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Sulfur         ppm         ASTM D5185m         360         297         347	Aluminum		ASTM D5185m	>5	1	1	1
Copper         ppm         ASTM D5185m         >5         4         ▲ 6         5           Tin         ppm         ASTM D5185m         >3         ▲ 5         2         ▲ 4           Vanadium         ppm         ASTM D5185m         0         <1	Lead		ASTM D5185m	>8	2	1	1
Tin	Copper		ASTM D5185m	>5		<u>^</u> 6	5
Azanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         4         1         2           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         5         5         4           Manganese         ppm         ASTM D5185m         26         20         27           Magnesium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Collifur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Godium         ppm         ASTM D5185m         >20         2         2	• •				<u>^</u> 5		<u> 4</u>
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         4         1         2           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         5         5         4           Manganese         ppm         ASTM D5185m         26         20         27           Magnesium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Solicon         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         histor							0
Soron   ppm   ASTM D5185m   4							
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         5         4           Manganese         ppm         ASTM D5185m         <1	Boron	ppm	ASTM D5185m		4	1	2
Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         26         20         27           Calcium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Solicon         ppm         ASTM D5185m         >180         231         209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/.1mm         *ASTM D7415 </td <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m		0	0	0
Manganese         ppm         ASTM D5185m         <1         <1         <1           Magnesium         ppm         ASTM D5185m         26         20         27           Calcium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Solicon         ppm         ASTM D5185m         >180         231         209         174           Solicon         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Sulfation         Abs/.1mm	Molybdenum	ppm	ASTM D5185m		5	5	4
Magnesium         ppm         ASTM D5185m         26         20         27           Calcium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Silicon         ppm         ASTM D5185m         >180         231         209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         *ASTM D7844         0         0         0           Soulfation         Abs/:1mm         *ASTM D7624         6.1         6.1         5.4           FLUID DEGRADATION         method         limit/base	•	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m		<1	<1	<1
Calcium         ppm         ASTM D5185m         1966         1837         183           Phosphorus         ppm         ASTM D5185m         293         246         265           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >180         231         209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20           FLUID DEGRADATION <t< td=""><td>•</td><td></td><td>ASTM D5185m</td><td></td><td>26</td><td>20</td><td>27</td></t<>	•		ASTM D5185m		26	20	27
Phosphorus         ppm         ASTM D5185m         293         246         268           Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >180         231         209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/1mm         *ASTM D7415         18.7         18.4         20           FLUID DEGRADATION         method         limit/base         current         history1         hi           Acid Number (AN)	-						1834
Zinc         ppm         ASTM D5185m         360         297         347           Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Silicon         ppm         ASTM D5185m         >180         ▲ 231         ▲ 209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10           Acid Number (AN)							265
Sulfur         ppm         ASTM D5185m         2482         2106         186           CONTAMINANTS         method         limit/base         current         history1         hi           Silicon         ppm         ASTM D5185m         >180         ▲ 231         ▲ 209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8 <td></td> <td>• • • • • • • • • • • • • • • • • • • •</td> <td></td> <td></td> <td></td> <td></td> <td>347</td>		• • • • • • • • • • • • • • • • • • • •					347
Silicon         ppm         ASTM D5185m         >180         ▲ 231         ▲ 209         174           Sodium         ppm         ASTM D5185m         >20         4         4         4         4           Potassium         ppm         ASTM D5185m         >20         2         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8							1864
Sodium	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION         method         limit/base         current         history1         hi           Dxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	Silicon	ppm	ASTM D5185m	>180	<u>231</u>	<b>2</b> 09	174
Potassium         ppm         ASTM D5185m         >20         2         2         3           INFRA-RED         method         limit/base         current         history1         hi           Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	Sodium	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>20			4
Soot %         %         *ASTM D7844         0         0         0           Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	Potassium	ppm	ASTM D5185m	>20	2	2	3
Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION         method         limit/base         current         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         6.1         6.1         5.4           Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION method limit/base current history1         history1         hi           Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	Soot %	%	*ASTM D7844		0	0	0
Sulfation         Abs/.1mm         *ASTM D7415         18.7         18.4         20.           FLUID DEGRADATION         method         limit/base         current         history1         hi           Dxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8							5.4
Oxidation         Abs/.1mm         *ASTM D7414         12.0         11.5         10.           Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8							20.4
Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)         mg KOH/g         ASTM D8045         1.0         1.16         0.998         0.8	Oxidation	Abs/.1mm	*ASTM D7414		12.0	11.5	10.1
				1.0			0.89
Base Number (BN) mg KOH/g ASTM D2896 5.4 4.05 4.20 15.	, ,						15.25



# **OIL ANALYSIS REPORT**







Certificate 12367

Sample No. Lab Number : 06157084 Unique Number : 10992507

: WC0865739 Test Package : MOB 2

Received Tested

: 23 Apr 2024 Diagnosed : 25 Apr 2024 - Jonathan Hester

South Jordan Powerstation, 10473 S. Bacchus Hwy. South Jordan, UT US 84095

> Contact: Aaron Klein aaron.klein@edlenergy.com T:

To discuss this sample report, contact Customer Service at 1-800-237-1369.  $^st$  - 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: