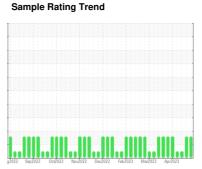


# **OIL ANALYSIS REPORT**







### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. ( Customer Sample Comment: Total oil added 63 gallons )

#### Wear

All component wear rates are normal.

### Contamination

Fuel content negligible. 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. The condition of the oil is suitable for further service.

Sample Number         Client Info         WC0799181         WC0799175           Sample Date         Client Info         15 May 2023         08 May 2023           Machine Age         hrs         Client Info         122955         122769           Oil Age         hrs         Client Info         NA         N/A           Oil Age         hrs         Client Info         NA         N/A           Oil Changed         Client Info         N/A         N/A           ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1           Water         WC Method         >0.1         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >22         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1		ipr2023	Dec2022 Feb2023 Mar2023	22 Oct2022 Nov2022	g2022 Sep20	GAL)	RON CG 40 (145
Sample Date         Client Info         15 May 2023         08 May 2023           Machine Age         hrs         Client Info         122955         122789           Oil Age         hrs         Client Info         637         471           Oil Changed         Client Info         N/A         N/A           Sample Status         Red         ABNORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1           Water         WC Method         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >45         7         7           Chromium         ppm         ASTM D5185m         >22         <1	1 history2	history1	current	limit/base	method	IATION	SAMPLE INFORM
Machine Age   hrs   Client Info   122955   122789	75 WC0799200	WC0799175	WC0799181		Client Info		Sample Number
Dil Age	23 01 May 2023	08 May 2023	15 May 2023		Client Info		Sample Date
Dil Changed   Client Info   N/A   ABNORMAL   ABNORMA	122624	122789	122955		Client Info	hrs	Machine Age
CONTAMINATION   method   limit/base   current   history1	305	471	637		Client Info	hrs	Oil Age
CONTAMINATION         method         limit/base         current         history1           Water         WC Method         >0.1         NEG         NEG           Glycol         WC Method         Imit/base         current         history1           WEAR METALS         method         limit/base         current         history1           ron         ppm         ASTM D5185m         >45         7         7           Chromium         ppm         ASTM D5185m         >2         <1	N/A	N/A	N/A		Client Info		Oil Changed
Water         WC Method         >0.1         NEG         NEG           Glycol         WC Method         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >45         7         7           Chromium         ppm         ASTM D5185m         >2         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0           Nickel         ppm         ASTM D5185m         >5         0         0           Aluminum         ppm         ASTM D5185m         >5         0         0           Aluminum         ppm         ASTM D5185m         >5         0         0           Copper         ppm         ASTM D5185m         >10         2         4           Lead         ppm         ASTM D5185m         >13         6         6         6           Copper         ppm         ASTM D5185m         0         0         0         0           Calcium         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D51	AL NORMAL	ABNORMAL	ABNORMAL				Sample Status
WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >45         7         7           Chromium         ppm         ASTM D5185m         >22         <1	history2	history1	current	limit/base	method	J	CONTAMINATION
WEAR METALS         method         limit/base         current         history1           ron         ppm         ASTM D5185m         >45         7         7           Chromium         ppm         ASTM D5185m         >2         -1         <1	NEG	NEG	NEG	>0.1	WC Method		Water
Pop	NEG	NEG	NEG		WC Method		Glycol
Description	1 history2	history1	current	limit/base	method		WEAR METALS
Sickel	5	7	7	>45	ASTM D5185m	ppm	ron
ASTM D5185m   STM D5185m   S	<1	<1	<1	>2	ASTM D5185m	ppm	Chromium
Silver	<1	0	0	>2	ASTM D5185m	ppm	Nickel
Aluminum ppm ASTM D5185m >10 2 4  Lead ppm ASTM D5185m >5 0 0  Copper ppm ASTM D5185m >14 2 1  Tin ppm ASTM D5185m >13 6 6  Avanadium ppm ASTM D5185m 0 0  Cadmium ppm ASTM D5185m 0 0  Cadmium ppm ASTM D5185m 0 0  Cadmium ppm ASTM D5185m 0 0  ADDITIVES method limit/base current history1  Barium ppm ASTM D5185m 1 0 0  Molybdenum ppm ASTM D5185m 1 0 0  Manganese ppm ASTM D5185m 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	<1	<1	<1		ASTM D5185m	ppm	Titanium
Lead         ppm         ASTM D5185m         >5         0         0           Copper         ppm         ASTM D5185m         >14         2         1           Fin         ppm         ASTM D5185m         >13         6         6           Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         2         <1	0	0	0	>5	ASTM D5185m	ppm	Silver
Copper         ppm         ASTM D5185m         >14         2         1           Fin         ppm         ASTM D5185m         >13         6         6           Vanadium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           Boron         ppm         ASTM D5185m         1         0           Barium         ppm         ASTM D5185m         1         0           Molybdenum         ppm         ASTM D5185m         2         <1	2	4	2	>10	ASTM D5185m	ppm	Aluminum
Silicon   ppm   ASTM D5185m   2712   3069   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3143   309   3160   3143   3	0	0	0	>5	ASTM D5185m	ppm	_ead
Vanadium         ppm         ASTM D5185m         0         0           Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         2         <1	2	1	2	>14	ASTM D5185m	ppm	Copper
Cadmium         ppm         ASTM D5185m         0         0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         2         <1	3	6	6	>13	ASTM D5185m	ppm	Γin
ADDITIVES	0	0	0		ASTM D5185m	ppm	/anadium
Soron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0	0	0	0		ASTM D5185m	ppm	Cadmium
Barium         ppm         ASTM D5185m         1         0         0           Molybdenum         ppm         ASTM D5185m         2         <1	1 history2	history1	current	limit/base	method		ADDITIVES
Molybdenum         ppm         ASTM D5185m         2         <1         <1           Manganese         ppm         ASTM D5185m         1         <1	0	0	0	0	ASTM D5185m	ppm	Boron
Manganese         ppm         ASTM D5185m         1         <1         <1           Magnesium         ppm         ASTM D5185m         9         13         9           Calcium         ppm         ASTM D5185m         2712         3069         3143           Phosphorus         ppm         ASTM D5185m         292         296         309           Zinc         ppm         ASTM D5185m         342         362         369           Sulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         >20         0         <1	0	0	0	1	ASTM D5185m	ppm	Barium
Magnesium         ppm         ASTM D5185m         9         13         9           Calcium         ppm         ASTM D5185m         2712         3069         3143           Phosphorus         ppm         ASTM D5185m         292         296         309           Zinc         ppm         ASTM D5185m         342         362         369           Sulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         >20         0         <1	<1	<1	<1	2	ASTM D5185m	ppm	Molybdenum
Calcium         ppm         ASTM D5185m         2712         3069         3143           Phosphorus         ppm         ASTM D5185m         292         296         309           Zinc         ppm         ASTM D5185m         342         362         369           Sulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         >20         0         <1	<1	<1	<1	1	ASTM D5185m	ppm	Manganese
Phosphorus         ppm         ASTM D5185m         292         296         309           Zinc         ppm         ASTM D5185m         342         362         369           Sulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         >20         0         <1	14	9	13	9	ASTM D5185m	ppm	Magnesium
Zinc         ppm         ASTM D5185m         342         362         369           Sulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         1         1         1           Potassium         ppm         ASTM D5185m         >20         0         <1	2886	3143	3069	2712	ASTM D5185m	ppm	Calcium
Gulfur         ppm         ASTM D5185m         2575         4098         4743           CONTAMINANTS         method         limit/base         current         history1           Gilicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Godium         ppm         ASTM D5185m         >20         0         <1	293	309	296	292	ASTM D5185m	ppm	Phosphorus
CONTAMINANTS         method         limit/base         current         history1           Silicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         1         1           Potassium         ppm         ASTM D5185m         >20         0         <1	357	369	362	342	ASTM D5185m		
Sollicon         ppm         ASTM D5185m         >200         ▲ 351         ▲ 286           Sodium         ppm         ASTM D5185m         1         1           Potassium         ppm         ASTM D5185m         >20         0         <1           Fuel         %         ASTM D3524         >4.0         0.3         0.3           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0.1         0           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	4187	4743	4098	2575	ASTM D5185m	ppm	Sulfur
Sodium	1 history2	history1	current	limit/base	method		CONTAMINANTS
Potassium         ppm         ASTM D5185m         >20         0         <1           Fuel         %         ASTM D3524         >4.0         0.3         0.3           INFRA-RED         method         limit/base         current         history1           Soot %         %         *ASTM D7844         0.1         0           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	199	<b>△</b> 286	<b>△</b> 351	>200	ASTM D5185m	ppm	Silicon
Fuel   %   ASTM D3524   >4.0   0.3   0.3	1	1	1		ASTM D5185m	ppm	Sodium
INFRA-RED	<1	<1	0	>20	ASTM D5185m	ppm	Potassium
Soot %         %         *ASTM D7844         0.1         0           Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         21.1         19.6           FLUID DEGRADATION method limit/base current history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	0.3	0.3	0.3	>4.0	ASTM D3524	%	-uel
Nitration         Abs/cm         *ASTM D7624         >20         5.8         5.4           Sulfation         Abs/.1mm         *ASTM D7615         >30         21.1         19.6           FLUID DEGRADATION method limit/base current history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	1 history2	history1	current	limit/base	method		INFRA-RED
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1           Dxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	0	0	0.1		*ASTM D7844	%	Soot %
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.1         19.6           FLUID DEGRADATION         method         limit/base         current         history1           Dxidation         Abs/.1mm         *ASTM D7414         >25         12.4         11.0	4.8	5.4	5.8	>20	*ASTM D7624	Abs/cm	Nitration
<b>Dxidation</b> Abs/.1mm *ASTM D7414 >25 <b>12.4</b> 11.0	16.1	19.6		>30	*ASTM D7415	Abs/.1mm	Sulfation
	1 history2	history1	current	limit/base	method	TION	FLUID DEGRADA
	9.3	11.0	12.4	>25	*ASTM D7414	Abs/.1mm	Oxidation
Total National (Aiv) ilighting Astivi Dougs 0.36 1.19 0.763	0.758	0.783	1.19	0.98	ASTM D8045	mg KOH/g	Acid Number (AN)
Base Number (BN) mg KOH/g ASTM D2896 8.1 <b>6.96</b> 7.51	7.03						, ,



## **OIL ANALYSIS REPORT**







Sample No. Lab Number

: WC0799181

: 05850256

Unique Number: 10479611

**Tested** : 19 May 2023 Diagnosed : 22 May 2023 - Don Baldridge Test Package: MOB 2 (Additional Tests: FuelDilution, PercentFuel)

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)

74265 Bombing Range Road Boardman, OR

US 97818 Contact: Blain Middleton

bmiddleton@archaea.energy T: (541)481-3232

F: