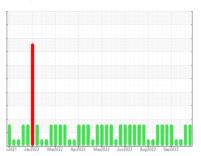


OIL ANALYSIS REPORT





Sample Rating Trend



DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. (Customer Sample Comment: Total oil added 112 gal)

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. Elemental level of silicon (Si) above normal.

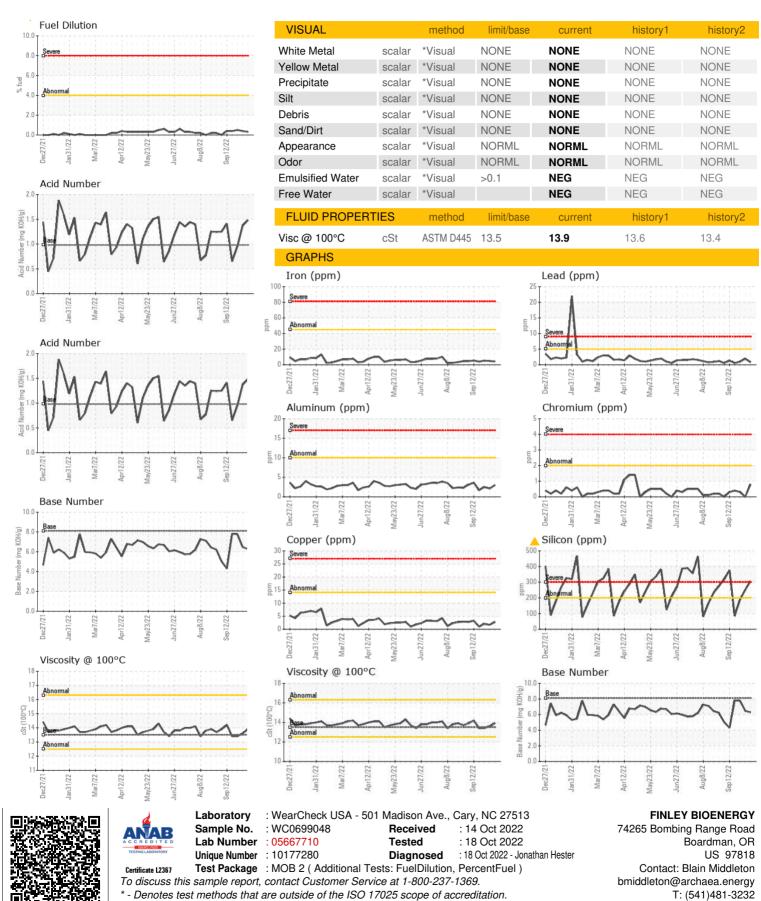
Fluid Condition

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 WC0699048 WC0699053 WC069905 Sample Date Client Info 11 Oct 2022 03 Oct 2022 27 Sep 20 Machine Age hrs Client Info 640 421 280 Oil Age hrs Client Info 640 421 280 Oil Changed Client Info Mot Changd NA Not Changd Sample Status ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 Water WC Method NEG NEG NEG WEG WEG NEG NEG NEG WEG MEG NEG NEG NEG MEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >2 <1	RON CG 40 (145 GAL)							
Client Info	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2	
Machine Age hrs Client Info 640	Sample Number		Client Info		WC0699048	WC0699053	WC0699046	
Dil Changed	Sample Date		Client Info		11 Oct 2022	03 Oct 2022	27 Sep 2022	
Dil Changed Client Info Not Changed ABNORMAL Not Change ABNORMAL North ABNORMAL	Machine Age	hrs	Client Info		117880	117687	117546	
CONTAMINATION	Oil Age	hrs	Client Info		640	421	280	
CONTAMINATION method limit/base current history1 history1 Water WC Method >0.1 NEG NEG NEG Allycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >45 4 5 5 Chromium ppm ASTM D5185m >2 -1 0 <1	Oil Changed		Client Info		Not Changd	N/A	Not Changd	
Water WC Method >0.1 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Fron ppm ASTM D5185m >45 4 5 5 Chromium ppm ASTM D5185m >2 41 1 0 Chromium ppm ASTM D5185m >2 41 1 0 Glikler ppm ASTM D5185m >10 3 2 2 2 Aluminum ppm ASTM D5185m >10 3 2 2 2 Copper ppm ASTM D5185m >10 3 2 2 2 Zinin ppm ASTM D5185m >13 6 4 3 3 2 2 2 Zinin ppm ASTM D5185m 0 0 0 <1 1 3 1 0 <t< td=""><td>Sample Status</td><td></td><td></td><td></td><td>ABNORMAL</td><td>ABNORMAL</td><td>NORMAL</td></t<>	Sample Status				ABNORMAL	ABNORMAL	NORMAL	
WEAR METALS	CONTAMINATION	١	method	limit/base	current	history1	history2	
WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >4 5 5 Chromium ppm ASTM D5185m >2 <1	Water		WC Method	>0.1	NEG	NEG	NEG	
Pop ASTM D5185m September Septemb	Glycol		WC Method		NEG	NEG	NEG	
Chromium	WEAR METALS		method	limit/base	current	history1	history2	
Sickel	ron	ppm	ASTM D5185m	>45	4	5	5	
Silver	Chromium	ppm	ASTM D5185m	>2	<1	0	<1	
Saliver	Nickel	ppm	ASTM D5185m	>2	<1	1	0	
Aluminum ppm ASTM D5185m >10 3 2 2 2 1 2 1 2 1 2 1 2 1 2 2	Titanium	ppm	ASTM D5185m		<1	0	0	
Lead ppm ASTM D5185m >5 <1 2 1 Copper ppm ASTM D5185m >14 3 2 2 Cin ppm ASTM D5185m >13 6 4 3 Azardaium ppm ASTM D5185m -1 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 <1 Barium ppm ASTM D5185m 1 0 0 0 Barium ppm ASTM D5185m 1 0 0 0 Manganese ppm ASTM D5185m 1 <1 0 <1 Manganese ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 300 273 <	Silver	ppm	ASTM D5185m		0	0	0	
Description	Aluminum	ppm	ASTM D5185m	>10	3	2	2	
Acid Number (AN) Time Part P	_ead	ppm	ASTM D5185m	>5	<1	2	1	
AsTM D5185m STATE D5185m STAT	Copper	ppm	ASTM D5185m	>14	3	2	2	
Anadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 <1 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 1 2 1 Manganese ppm ASTM D5185m 2 1 2 1 Manganesium ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Sulfur ppm ASTM D5185m 292 300 273 344 CONTAMINANTS method limit/base current history1 history1 <td></td> <td>ppm</td> <td>ASTM D5185m</td> <td>>13</td> <td>6</td> <td>4</td> <td>3</td>		ppm	ASTM D5185m	>13	6	4	3	
Cademium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history3 Boron ppm ASTM D5185m 0 0 0 <1 Barium ppm ASTM D5185m 1 0 0 0 Molybdenum ppm ASTM D5185m 2 1 2 1 Manganese ppm ASTM D5185m 2 1 2 1 Magnesium ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Bulfur ppm ASTM D5185m 292 300 273 344 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >200 306 2	/anadium		ASTM D5185m		<1	0	0	
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0	Cadmium		ASTM D5185m		0	0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 2 1 2 1 Manganese ppm ASTM D5185m 1 <1 0 <1 Magnesium ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 342 375 324 379 Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history1 Bilicon ppm ASTM D5185m >200 40 252 189 Godium ppm ASTM D5185m >20 0 0 0 0 Fuel % ASTM D5185m	Boron	ppm	ASTM D5185m	0	0	0	<1	
Manganese ppm ASTM D5185m 1 <1 0 <1 Magnesium ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 342 375 324 379 Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >200 306 252 189 Godium ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0<	Barium	ppm	ASTM D5185m	1	0	0	0	
Magnesium ppm ASTM D5185m 9 20 12 15 Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 342 375 324 379 Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >200 306 252 189 Solicon ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Goot was ASTM D5185m >20 0 0 0 0 INFRA-RED method limit/base current	Nolybdenum	ppm	ASTM D5185m	2	1	2	1	
Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 375 324 379 Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >200 306 252 189 Solicon ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Fuel % ASTM D3524 >4.0 0.3 0.4 0.5 INFRA-RED method limit/base current history1 history Solf wight % *ASTM D7624 >20	Manganese	ppm	ASTM D5185m	1	<1	0	<1	
Calcium ppm ASTM D5185m 2712 3204 2970 3205 Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 292 375 324 379 Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >200 306 252 189 Sodium ppm ASTM D5185m >20 0 0 0 Potassium ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D3524 >4.0 0.3 0.4 0.5 INFRA-RED method limit/base current history1 history1 Soot % *ASTM D7844 0.1 0.1 0.1 Sulfation Abs/:1mm *ASTM D7624 >20 6.9 <td< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>9</td><td>20</td><td>12</td><td>15</td></td<>	Magnesium	ppm	ASTM D5185m	9	20	12	15	
Phosphorus ppm ASTM D5185m 292 300 273 344 Zinc ppm ASTM D5185m 342 375 324 379 Bulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history1 Bilicon ppm ASTM D5185m >200 306 252 189 Bodium ppm ASTM D5185m >20 0 0 0 Bodium ppm ASTM D354b >4.0		ppm	ASTM D5185m	2712	3204	2970	3205	
Zinc ppm ASTM D5185m 342 375 324 379 Gulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history3 Gilicon ppm ASTM D5185m >200 306 252 189 Godium ppm ASTM D5185m >20 0 0 0 Godium ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Fuel % ASTM D5185m >20 0 0 0 Method limit/base current history1 history1 Boot % % *ASTM D7844 0.1 0.1 0.1 Goot % % *ASTM D7845 >20 6.9 6.2 5.8	Phosphorus		ASTM D5185m	292	300	273	344	
Sulfur ppm ASTM D5185m 2575 4057 3671 4383 CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >200 306 252 189 Sodium ppm ASTM D5185m >20 0 0 0 Fuel % ASTM D3524 >4.0 0.3 0.4 0.5 INFRA-RED method limit/base current history1 history3 Soot % % *ASTM D7844 0.1 0.1 0.1 0.1 Soulfation Abs/.1mm *ASTM D7415 >30 24.1	•		ASTM D5185m	342	375	324	379	
Soliticon ppm ASTM D5185m >200 ▲ 306 ▲ 252 189	Sulfur			2575	4057			
Sodium ppm ASTM D5185m <1 1 1 1 1 1 1 1 1	CONTAMINANTS		method	limit/base	current	history1	history2	
Potassium ppm ASTM D5185m >20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0					Cullent			
Fuel % ASTM D3524 >4.0 0.3 0.4 0.5 INFRA-RED method limit/base current history1 history Soot % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.9 6.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 21.6 20.0 FLUID DEGRADATION method limit/base current history1 history Dxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Silicon	ppm	ASTM D5185m					
INFRA-RED		• •			▲ 306	▲ 252	189	
Goot % % *ASTM D7844 0.1 0.1 0.1 Nitration Abs/cm *ASTM D7624 >20 6.9 6.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 21.6 20.0 FLUID DEGRADATION method limit/base current history1 history1 Dxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium	ppm	ASTM D5185m	>200	▲ 306 <1	▲ 252 1	189 1	
Nitration Abs/cm *ASTM D7624 >20 6.9 6.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 21.6 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium	ppm ppm	ASTM D5185m ASTM D5185m	>200 >20	▲ 306 <1 0	▲ 252 1 0	189 1 0	
Nitration Abs/cm *ASTM D7624 >20 6.9 6.2 5.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.1 21.6 20.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium Fuel	ppm ppm	ASTM D5185m ASTM D5185m ASTM D3524	>200 >20 >4.0	▲ 306 <1 0 0.3	▲ 252 1 0 0.4	189 1 0 0.5	
Sulfation Abs/.1mm *ASTM D7415 >30 24.1 21.6 20.0 FLUID DEGRADATION method limit/base current history1 history1 Dxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium Fuel INFRA-RED	ppm ppm %	ASTM D5185m ASTM D5185m ASTM D3524 method	>200 >20 >4.0	▲ 306 <1 0 0.3 current	252 1 0 0.4 history1	189 1 0 0.5 history2	
Dxidation Abs/.1mm *ASTM D7414 >25 15.6 13.0 11.3 Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm %	ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	>200 >20 >4.0 limit/base	▲ 306 <1 0 0.3 current 0.1	▲ 252 1 0 0.4 history1 0.1	189 1 0 0.5 history2	
Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium Fuel INFRA-RED Soot % Vitration	ppm ppm % % Abs/cm	ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624	>200 >20 >4.0 Iimit/base	▲ 306 <1 0 0.3 current 0.1 6.9	▲ 252 1 0 0.4 history1 0.1 6.2	189 1 0 0.5 history2 0.1 5.8	
Acid Number (AN) mg KOH/g ASTM D8045 0.98 1.48 1.37 0.95	Sodium Potassium Fuel INFRA-RED Soot % Nitration Gulfation	ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415	>200 >20 >4.0 Iimit/base >20 >30	▲ 306 <1 0 0.3 current 0.1 6.9 24.1	▲ 252 1 0 0.4 history1 0.1 6.2 21.6	189 1 0 0.5 history2 0.1 5.8 20.0	
	Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	>200 >20 >4.0 limit/base >20 >30 limit/base	▲ 306 <1 0 0.3 current 0.1 6.9 24.1 current	▲ 252 1 0 0.4 history1 0.1 6.2 21.6 history1	189 1 0 0.5 history2 0.1 5.8 20.0 history2	
	Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Dxidation	ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method *ASTM D7414	>200 >20 >4.0 limit/base >20 >30 limit/base >25	▲ 306 <1 0 0.3 current 0.1 6.9 24.1 current 15.6	▲ 252 1 0 0.4 history1 0.1 6.2 21.6 history1 13.0	189 1 0 0.5 history2 0.1 5.8 20.0 history2 11.3	



OIL ANALYSIS REPORT



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

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