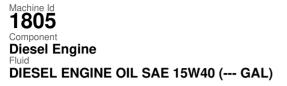


## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



#### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

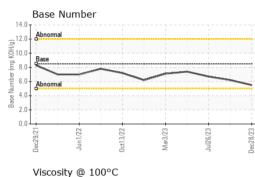
### Fluid Condition

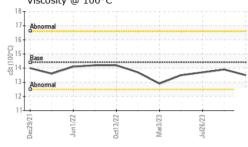
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number     Client Info     WC0844973     WC0820433     WC082       Sample Date     Client Info     161494     155884     150354       Oil Age     mis     Client Info     0     0     0       Oil Changed     Client Info     Changed     Changed     Changed     Changed       Oil Changed     Client Info     Changed     Changed     Changed     Changed       Sample Status     Client Info     Changed     Changed     Changed     Changed       Supple Status     Client Info     Changed     Changed     Changed     Changed       Supple Status     WC Method     >5     <1.0     <1.0     <1.0       Water     WC Method     >0.2     NEG     NEG     NEG       Wear     WC Method     >0     7     5     6     Chromium     ppm     ASTM 05185m     >20     2     1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <							
Sample Number     Client Info     WC0844973     WC080433     WC082       Sample Date     Client Info     28 Dec 2023     20 Oct 2023     26 Jul 2       Machine Age     mls     Client Info     161494     155844     150354       Oil Age     Client Info     Changed     Chandibibis     Shangibibis	SAMPLE INFORM		method	Jun2022 Oct2022	Mar2023 Jui2023	Dec2023	history2
Sample Date     Client Info     28 Dec 2023     20 Oct 2023     26 Jul 2       Machine Age     mis     Client Info     161494     155884     150354       Oil Changed     Client Info     0     0     0     0     0       Oil Changed     Client Info     Changed     Change     No     Changed				mmubase			
Machine Age     mits     Client Info     161494     155884     150354       Oil Age     mits     Client Info     0     0     0     0       Oil Changed     Client Info     Changed     Changed <t< td=""><td></td><td></td><td>0.10110 1110</td><td></td><th></th><td></td><td></td></t<>			0.10110 1110				
Dil Age     mis     Client Info     0     0     0     0       Dil Changed     Client Info     Changed	•	mala					
Dil Changed Sample Status Client Info Changed NORMAL NORMAL NORMAL NORMAL NORMAL   CONTAMINATION method limit/base current history1 history1 hist   Fuel WC Method >5 <1.0	0						
Sample Status     NORMAL     Normality     Nest       Fuel     WC Method     >5     <1.0	-	mis			-	÷	÷
CONTAMINATION     method     limit/base     current     history1     hist       Fuel     WC Method     >5     <1.0	Ũ		Client Info		-	÷	÷
Fuel     WC Method     >5     <1.0				11	-	-	
Water     WC Method     >0.2     NEG     NEG     NEG     NEG       Glycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     hist       Iron     ppm     ASTM D5185m     >100     7     5     6       Chromium     ppm     ASTM D5185m     >20     <1		N					history2
Silycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     hist       ron     ppm     ASTM D5185m     >100     7     5     6       Dhromium     ppm     ASTM D5185m     >20     <1							
WEAR METALS     method     limit/base     current     history1     hist       tron     ppm     ASTM D5185m     >100     7     5     6       Chromium     ppm     ASTM D5185m     >20     <1				>0.2			
ron     ppm     ASTM D5185m     >100     7     5     6       Chromium     ppm     ASTM D5185m     >20     <1	•		WC Method			NEG	NEG
Chromium     ppm     ASTM D5185m     >20     <1     <1     <1       Nickel     ppm     ASTM D5185m     >4     0     0     0       Titanium     ppm     ASTM D5185m     >4     0     0     0       Silver     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >20     2     2     1       Copper     ppm     ASTM D5185m     >20     0     0     <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >4     0     0     0       Titanium     ppm     ASTM D5185m     >3     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >40     0     0     <1	-						
Titanium     ppm     ASTM D5185m     0     <1     <1       Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >20     0     0     <1		ppm	ASTM D5185m	>20			
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >330     1     <1     1       Copper     ppm     ASTM D5185m     >330     1     <1     1       Tin     ppm     ASTM D5185m     >330     1     <1     1       Cadmium     ppm     ASTM D5185m     0     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history1       Barium     ppm     ASTM D5185m     10     3     0     0     0       Maganese     ppm     ASTM D5185m     100     85     76     79       Maganesium     ppm     ASTM D5185m     450     234	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum     ppm     ASTM D5185m     >20     2     2     1       Lead     ppm     ASTM D5185m     >40     0     0     <1	Titanium	ppm	ASTM D5185m		0	<1	<1
Lead     ppm     ASTM D5185m     >40     0     0     0     1     1       Copper     ppm     ASTM D5185m     >330     1     <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper     ppm     ASTM D5185m     >330     1     <1     1       Tin     ppm     ASTM D5185m     >15     0     0     <1	Aluminum	ppm	ASTM D5185m	>20	2	2	1
Fin     ppm     ASTM D5185m     >15     0     0     <1       Vanadium     ppm     ASTM D5185m     0     0     0     <1	_ead	ppm	ASTM D5185m	>40	0	0	
Vanadium     ppm     ASTM D5185m     0     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     hist       Boron     ppm     ASTM D5185m     250     114     79     17       Barium     ppm     ASTM D5185m     250     114     79     17       Barium     ppm     ASTM D5185m     10     3     0     0       Magnesie     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     845     229     263       Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     >25     11	Copper	ppm	ASTM D5185m	>330	1	<1	1
Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     hist       Boron     ppm     ASTM D5185m     250     114     79     17       Barium     ppm     ASTM D5185m     10     3     0     0       Magnesium     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     450     234     229     263       Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     255	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES     method     limit/base     current     history1     hist       Boron     ppm     ASTM D5185m     250     114     79     17       Barium     ppm     ASTM D5185m     10     3     0     0       Manganese     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     450     234     229     263       Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1150     901     894     969       Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     >25	/anadium	ppm	ASTM D5185m		0	0	<1
Boron     ppm     ASTM D5185m     250     114     79     17       Barium     ppm     ASTM D5185m     10     3     0     0       Malganese     ppm     ASTM D5185m     100     85     76     79       Manganese     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     85     76     79       Calcium     ppm     ASTM D5185m     100     0     0     <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium     ppm     ASTM D5185m     10     3     0     0       Molybdenum     ppm     ASTM D5185m     100     85     76     79       Manganese     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     85     76     79       Magnesium     ppm     ASTM D5185m     100     0     0     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     100     85     76     79       Manganese     ppm     ASTM D5185m     0     0     0     <1	Boron	ppm	ASTM D5185m	250	114	79	17
Manganese     ppm     ASTM D5185m     0     0     <1       Magnesium     ppm     ASTM D5185m     450     234     229     263       Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1150     901     894     969       Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     4250     3379     3222     3988       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >20     2     <1	Barium	ppm	ASTM D5185m	10	3	0	0
Magnesium     ppm     ASTM D5185m     450     234     229     263       Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1150     901     894     969       Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     4250     3379     3222     3988       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >158     4     11     9       Potassium     ppm     ASTM D5185m     >20     2     <1	Molybdenum	ppm	ASTM D5185m	100	85	76	79
Calcium     ppm     ASTM D5185m     3000     1690     1701     1995       Phosphorus     ppm     ASTM D5185m     1150     901     894     969       Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     4250     3379     3222     3988       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >20     2     <1	Vanganese	ppm	ASTM D5185m		0	0	<1
Phosphorus     ppm     ASTM D5185m     1150     901     894     969       Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     4250     3379     3222     3988       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >20     2     <1	Magnesium	ppm	ASTM D5185m	450	234	229	263
Zinc     ppm     ASTM D5185m     1350     1225     1238     1272       Sulfur     ppm     ASTM D5185m     4250     3379     3222     3988       CONTAMINANTS     method     limit/base     current     history1     hist       Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >158     4     11     9       Potassium     ppm     ASTM D5185m     >20     2     <1	Calcium	ppm	ASTM D5185m	3000	1690	1701	1995
SulfurppmASTM D5185m4250337932223988CONTAMINANTSmethodlimit/basecurrenthistory1histSiliconppmASTM D5185m>251187SodiumppmASTM D5185m>1584119PotassiumppmASTM D5185m>202<1	Phosphorus	ppm	ASTM D5185m	1150	901	894	969
CONTAMINANTSmethodlimit/basecurrenthistory1histSiliconppmASTM D5185m>251187SodiumppmASTM D5185m>1584119PotassiumppmASTM D5185m>202<1	Zinc	ppm	ASTM D5185m	1350		1238	1272
Silicon     ppm     ASTM D5185m     >25     11     8     7       Sodium     ppm     ASTM D5185m     >158     4     11     9       Potassium     ppm     ASTM D5185m     >158     4     11     9       Potassium     ppm     ASTM D5185m     >20     2     <1	Sulfur	ppm	ASTM D5185m	4250	3379	3222	3988
Sodium     ppm     ASTM D5185m     >158     4     11     9       Potassium     ppm     ASTM D5185m     >20     2     <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     2     <1     2       INFRA-RED     method     limit/base     current     history1     hist       Soot %     %     *ASTM D7844     >3     0.3     0.3     0.3       Nitration     Abs/cm     *ASTM D7624     >20     8.9     8.9     9.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     20.7     20.2     19.2       FLUID DEGRADATION     method     limit/base     current     history1     hist	Silicon	ppm	ASTM D5185m	>25	11	8	7
INFRA-REDmethodlimit/basecurrenthistory1histSoot %%*ASTM D7844>30.30.30.3NitrationAbs/cm*ASTM D7624>208.98.99.1SulfationAbs/.1mm*ASTM D7415>3020.720.219.2FLUID DEGRADATIONmethodlimit/basecurrenthistory1hist	Sodium	ppm	ASTM D5185m	>158	4	11	9
Soot %     %     *ASTM D7844     >3     0.3     0.3     0.3     0.3       Nitration     Abs/cm     *ASTM D7624     >20     8.9     8.9     9.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     20.7     20.2     19.2       FLUID DEGRADATION     method     limit/base     current     history1     hist	Potassium	ppm	ASTM D5185m	>20	2	<1	2
Nitration     Abs/cm     *ASTM D7624     >20     8.9     8.9     9.1       Sulfation     Abs/.1mm     *ASTM D7415     >30     20.7     20.2     19.2       FLUID DEGRADATION     method     limit/base     current     history1     hist	INFRA-RED		method	limit/base	current	history1	history2
Sulfation     Abs/.1mm     *ASTM D7415     >30     20.7     20.2     19.2       FLUID DEGRADATION     method     limit/base     current     history1     hist	Soot %	%	*ASTM D7844	>3	0.3	0.3	0.3
Sulfation     Abs/.1mm     *ASTM D7415     >30     20.7     20.2     19.2       FLUID DEGRADATION     method     limit/base     current     history1     hist	Nitration	Abs/cm	*ASTM D7624	>20	8.9	8.9	9.1
· · · · · · · · · · · · · · · · · · ·	Sulfation						19.2
Ovidation Abc/1mm *ASTM D7414 >25 17 4 168 150	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.4	16.8	15.9
Base Number (BN)     mg KOH/g     ASTM D2896     8.5     5.5     6.2     6.7	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	5.5	6.2	6.7

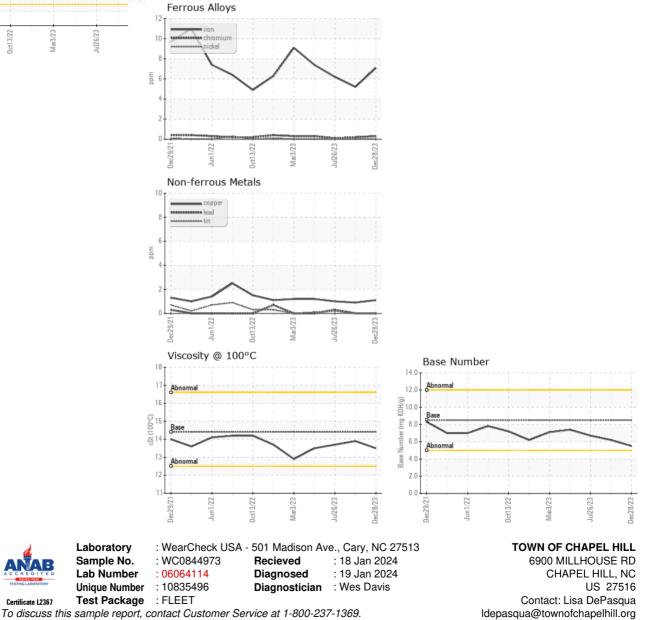


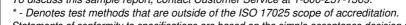
# **OIL ANALYSIS REPORT**





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
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT		method	limit/base	current	history1	history2
TLOIDTHOFLNI		methou	iiiiii/base	Current	TIIStOLA	TIIStOLYZ
Visc @ 100°C	cSt	ASTM D445	14.4	13.5	13.9	13.7
GRAPHS						





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

Certificate L2367

Contact/Location: Lisa DePasqua - TOWCHANC

F:

T: (919)696-4941