

### **OIL ANALYSIS REPORT**

**VISUAL METAL** 

#### Machine Id

# LIM MLU4 LIM MLU4 Component Outboard Pump

Fluid {not provided} (--- GAL)

#### DIAGNOSIS

#### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

#### A Wear

Moderate concentration of visible metal present. All component wear rates are normal.

#### Contamination

The water content is negligible. There is no indication of any contamination in the oil.

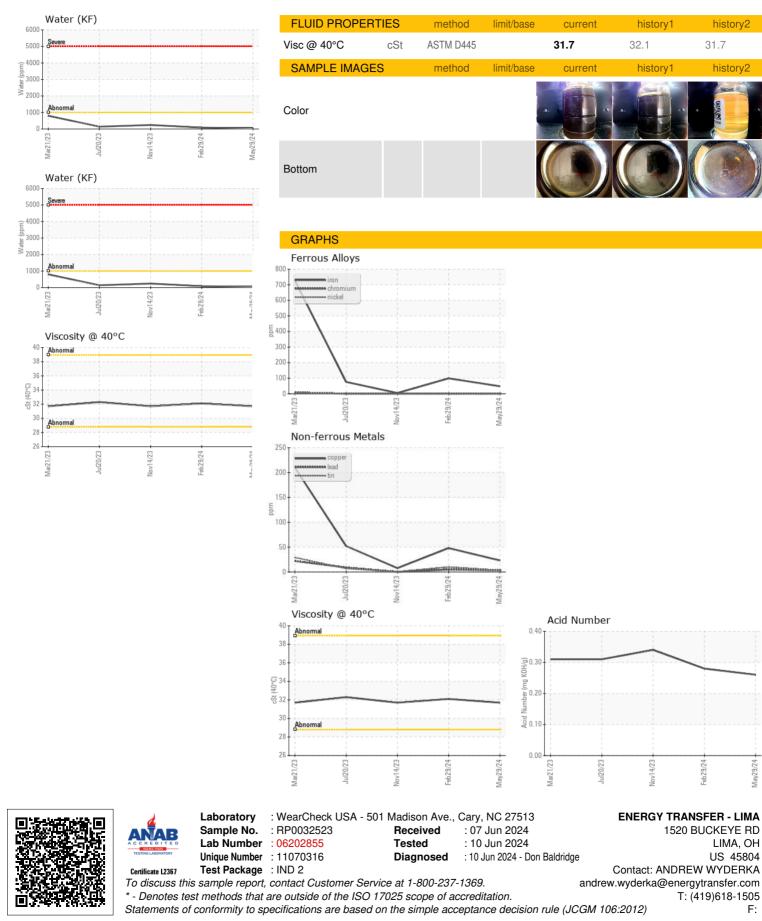
#### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

Sample Date     Client Info     29 May 2024     29 Feb 2024     14 Nov 2023       Machine Age     hrs     Client Info     0     0     0       Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     method     limit/base     current     history1     history2       from     ppm     ASTM 05155m     >90     48     99     5       Chromium     ppm     ASTM 05155m     >5     0     0     0       Viskel     ppm     ASTM 05155m     >5     0     0     0       Aumium     ppm     ASTM 05155m     >30     23     48     8       Tin     ppm     ASTM 05155m     9     4     10     <1       Cadmium     ppm     ASTM 05155m     9     4     10     <1       Astm 05155m     9     <1     0     0     <1     0       Astm 05155m	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   0   0   0     Dil Age   hrs   Client Info   N/A   N/A   N/A     Sample Status   Imethod   Imit/base   current   history1   history1     WEAR METALS   method   Imit/base   current   history1   history2     Iron   ppm   ASTM 05185m   >90   48   99   5     Chromium   ppm   ASTM 05185m   >5   0   0   0     Nickel   ppm   ASTM 05185m   >3   0   0   -1     Silver   ppm   ASTM 05185m   >7   0   <1	Sample Number		Client Info		RP0032523	RP0039860	RP0032548	
Dil Age hrs Client Info 0 0 0   Sample Status Client Info N/A N/A N/A N/A N/A   WEAR METALS method limit/base current history1 history2   fron ppm ASTM 05185m >5 <1	Sample Date		Client Info		29 May 2024	29 Feb 2024	14 Nov 2023	
Di Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     method     limit/base     current     history1     history2       Iron     ppm     ASTM 05185m     >50     48     99     5       Chromium     ppm     ASTM 05185m     >50     0     0     0       Nickel     ppm     ASTM 05185m     >5     0     0     0       Silver     ppm     ASTM 05185m     >3     0     0     0       Copper     ppm     ASTM 05185m     >12     3     5     0       Cadmium     ppm     ASTM 05185m     >12     3     5     0       Cadmium     ppm     ASTM 05185m     >12     3     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     1     0	Machine Age	hrs	Client Info		0	0	0	
Sample Status     method     Imit/base     current     history1     NORMAL       WEAR METALS     method     Imit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >5     <1	Oil Age	hrs	Client Info		0	0	0	
WEAR METALS     method     limit/base     current     history1     history2       iron     ppm     ASTM D5185n     >90     48     99     5       Chromium     ppm     ASTM D5185n     >5     0     0     0       Nickel     ppm     ASTM D5185n     >5     0     0     0       Silver     ppm     ASTM D5185n     >3     0     0     0       Aluminum     ppm     ASTM D5185n     >7     0     <1	Oil Changed		Client Info		N/A	N/A	N/A	
ron     ppm     ASTM D5185n     >90     48     99     5       Chromium     ppm     ASTM D5185n     >5     0     0     0       Nickel     ppm     ASTM D5185n     >5     0     0     0     0       Silver     ppm     ASTM D5185n     >3     0     0     0     0       Astm D5185n     >3     0     0     0     0     0       Astm D5185n     >3     0     0     0     0     0       Copper     ppm     ASTM D5185n     >12     3     5     0       Cadmium     ppm     ASTM D5185n     >9     4     10     <1	Sample Status				ABNORMAL	ABNORMAL	NORMAL	
Chromium     ppm     ASTM D5185m     >5     <1     <1     0       Nickel     ppm     ASTM D5185m     >5     0     0     0     0       Silver     ppm     ASTM D5185m     >3     0     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     0     0       Aluminum     ppm     ASTM D5185m     >7     0     <1	WEAR METALS		method	limit/base	current	history1	history2	
Nickel     ppm     ASTM D5185m     >5     0     0     0       Titanium     ppm     ASTM D5185m     >3     0     0     <1	Iron	ppm	ASTM D5185m	>90	48	<u> </u>	5	
Titanium     ppm     ASTM D5185m     >3     0     0     <1       Silver     ppm     ASTM D5185m     >7     0     <1	Chromium	ppm	ASTM D5185m	>5	<1	<1	0	
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >7     0     <1     <1       Lead     ppm     ASTM D5185m     >72     0     <1     <1       Copper     ppm     ASTM D5185m     >30     23     ▲     48     8       Tin     ppm     ASTM D5185m     >9     4     ▲     10     <1       Vanadium     ppm     ASTM D5185m     >9     4     ▲     10     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Goldenum     ppm     ASTM D5185m     33     46     66     66       Calaisim     ppm     ASTM D5185m     <3     1     0     22       Obsphorus     ppm     ASTM D5185m>	Nickel	ppm	ASTM D5185m	>5	0	0	0	
Silver     ppm     ASTM D5185m     >3     0     0     0       Aluminum     ppm     ASTM D5185m     >77     0     <1	Titanium	ppm	ASTM D5185m	>3	0	0	<1	
Lead   ppm   ASTM D5185m   >12   3   5   0     Copper   ppm   ASTM D5185m   >30   23   ▲ 48   8     Tin   ppm   ASTM D5185m   >9   4   10   <1	Silver		ASTM D5185m	>3	0	0	0	
LeadppmASTM D5185m ASTM D5185m>12350CopperppmASTM D5185m>3023▲ 488TinppmASTM D5185m>9410<1	<1	Aluminum	ppm	ASTM D5185m	>7	0	<1	<1
Tin     ppm     ASTM D5185m     >9     4     A     10     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     1     1     0       Magnesium     ppm     ASTM D5185m     1     1     0       Phosphorus     ppm     ASTM D5185m     1     0     0     0       Zine     ppm     ASTM D5185m     <60	Lead		ASTM D5185m	>12	3	5	0	
Tin     ppm     ASTM D5185m     >9     4     ▲     10     <1       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     <1	Copper		ASTM D5185m	>30		<b>4</b> 8	8	
Vanadium     ppm     ASTM D5185m     <1     0     <1       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     <1	Tin				4	<b>1</b> 0	<1	
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m000BariumppmASTM D5185m000MolybdenumppmASTM D5185m000MaganeseppmASTM D5185m334666CalciumppmASTM D5185m3110MagnesiumppmASTM D5185m310PhosphorusppmASTM D5185m310ZineppmASTM D5185m600CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>6013<1	Vanadium		ASTM D5185m		<1	0	<1	
Boron   ppm   ASTM D5185m   0   0   0     Barium   ppm   ASTM D5185m   0   0   0     Molybdenum   ppm   ASTM D5185m   0   0   0     Magnesse   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   31   1   0     Phosphorus   ppm   ASTM D5185m   3   1   0     Zinc   ppm   ASTM D5185m   66   1   3   <1     Solicon   ppm   ASTM D5185m   >60   1   3   <1   0     Solicon   ppm   ASTM D5185m   >60   1   3   <1   0     Solicon   ppm   ASTM D5185m   >20   0   0   0   0     Solicon   ppm   ASTM D5185m   >20   0   0   0   0     Solicon   ppm   ASTM D6304   >.1   0.004   0.083   243     FLUID	Cadmium		ASTM D5185m		0	0	0	
Barium   ppm   ASTM D5185m   0   0   0   0     Molybdenum   ppm   ASTM D5185m   0   0   0   0     Maganese   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   3   1   0     Phosphorus   ppm   ASTM D5185m   3   1   0     Zinc   ppm   ASTM D5185m   6   0   0     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >60   1   3   <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum   ppm   ASTM D5185m   0   0   0     Manganese   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   33   46   66     Calcium   ppm   ASTM D5185m   3   1   0     Phosphorus   ppm   ASTM D5185m   3   1   0     Zinc   ppm   ASTM D5185m   6   0   0     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >60   1   3   <1	Boron	ppm	ASTM D5185m		0	0	0	
MolybdenumppmASTM D5185m000MaganeseppmASTM D5185m334666CalciumppmASTM D5185m3310PhosphorusppmASTM D5185m310ZincppmASTM D5185m310ZincppmASTM D5185m600CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>6013<1	Barium	ppm	ASTM D5185m		0	0	0	
ManganeseppmASTM D5185m<110MagnesiumppmASTM D5185m334666CalciumppmASTM D5185m310PhosphorusppmASTM D5185m310ZincppmASTM D5185m600CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>6013<1	Molybdenum		ASTM D5185m		0	0	0	
MagnesiumppmASTM D5185m334666CalciumppmASTM D5185m<1	Manganese		ASTM D5185m		<1	1	0	
CalciumppmASTM D5185m<1<10PhosphorusppmASTM D5185m310ZincppmASTM D5185m600CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>6013<1	Magnesium		ASTM D5185m		33	46	66	
Phosphorus   ppm   ASTM D5185m   3   1   0     Zinc   ppm   ASTM D5185m   6   0   0     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >60   1   3   <1   0     Sodium   ppm   ASTM D5185m   >60   1   3   <1   0   2     Potassium   ppm   ASTM D5185m   >60   1   3   <1   0   2     Potassium   ppm   ASTM D5185m   >20   0   0   0   0     Water   %   ASTM D6304   >.1   0.004   0.008   0.024     opm Water   ppm   ASTM D8045   .000   40   83   243     FLUID DEGRADATION   method   limit/base   current   history1   history2     Acid Number (AN)   mg KOHg   ASTM D8045   0.26   0.28   0.34     VISUAL   method   limit/base   current   history1   history2     Yellow Met	Calcium		ASTM D5185m		<1	<1	0	
ZincppmASTM D5185m600CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>6013<1	Phosphorus		ASTM D5185m		3	1	0	
Silicon   ppm   ASTM D5185m   >60   1   3   <1     Sodium   ppm   ASTM D5185m   <1	Zinc		ASTM D5185m		6	0	0	
SodiumppmASTM D5185m<102PotassiumppmASTM D5185m>20000Water%ASTM D6304>.10.0040.0080.024opm WaterppmASTM D6304>10004083243FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2Acid Number (AN)mg KOH/gASTM D80450.260.280.34VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONENONENONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEGNEG	CONTAMINANTS	;	method	limit/base	current	history1	history2	
PotassiumppmASTM D5185m>20000Water%ASTM D6304>.10.0040.0080.024opm WaterppmASTM D6304>10004083243FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2Acid Number (AN)mg KOH/gASTM D80450.260.280.34VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERNONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEGNEG	Silicon	ppm	ASTM D5185m	>60	1	3	<1	
Water%ASTM D6304>.10.0040.0080.024opm WaterppmASTM D6304>10004083243FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2Acid Number (AN)mg KOHgASTM D80450.260.280.34VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERNONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Sodium	ppm	ASTM D5185m		<1	0	2	
oppMaximppmASTM D6304>10004083243FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2Acid Number (AN)mg KOH/gASTM D80450.260.280.34VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERNONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEGNEG	Potassium	ppm	ASTM D5185m	>20	0	0	0	
FLUID DEGRADATION   method   limit/base   current   history1   history2     Acid Number (AN)   mg KOHg   ASTM D8045   0.26   0.28   0.34     VISUAL   method   limit/base   current   history1   history2     White Metal   scalar   *Visual   NONE   MODER   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     Appearance   scalar   *Visual   NORML   NORML   NORML   NORML     Odor   scalar   *Visual   NORML   NORML   NORML   NORML   NORML	Water	%	ASTM D6304	>.1	0.004	0.008	0.024	
Acid Number (AN)mg KOH/gASTM D80450.260.280.34VISUALmethodlimit/basecurrenthistory1history2White Metalscalar*VisualNONEMODERNONENONEYellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEGNEG	ppm Water	ppm	ASTM D6304	>1000	40	83	243	
VISUAL method limit/base current history1 history2   White Metal scalar *Visual NONE MODER NONE NONE   Yellow Metal scalar *Visual NONE NONE NONE NONE NONE   Precipitate scalar *Visual NONE NONE NONE NONE NONE   Silt scalar *Visual NONE 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	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
White Metalscalar*VisualNONEMODERNONENONEYellow Metalscalar*VisualNONENONENONENONENONEPrecipitatescalar*VisualNONENONENONENONENONESiltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Acid Number (AN)	mg KOH/g	ASTM D8045		0.26	0.28	0.34	
Yellow Metalscalar*VisualNONENONENONENONEPrecipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEGNEG	VISUAL		method	limit/base	current	history1	history2	
Precipitatescalar*VisualNONENONENONENONESiltscalar*VisualNONENONENONENONEDebrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	White Metal	scalar			-			
Siltscalar*VisualNONENONENONENONENONEDebrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
Debrisscalar*VisualNONENONELIGHTLIGHTSand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Precipitate	scalar	*Visual	NONE		NONE	NONE	
Sand/Dirtscalar*VisualNONENONENONENONEAppearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Silt	scalar	*Visual	NONE	NONE	NONE	NONE	
Appearancescalar*VisualNORMLNORMLNORMLNORMLOdorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Debris	scalar	*Visual	NONE	NONE	LIGHT	LIGHT	
Odorscalar*VisualNORMLNORMLNORMLNORMLEmulsified Waterscalar*Visual>.1NEGNEG	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Emulsified Water scalar *Visual >.1 NEG NEG NEG	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
Free Water scalar *Visual NEG NDREW WYDERK NEGNELI	Emulsified Water	scalar	*Visual	>.1	NEG			
	Free Water	scalar	*Visual	_ r	NEG	INDREW WYDE	RKALEGNELIN	



## **OIL ANALYSIS REPORT**



Contact/Location: ANDREW WYDERKA - ENELIM

F:

LIMA, OH

US 45804

=eb29/24

10/60mm

history2

history2

31.7