OIL ANALYSIS REPORT

Sample Rating Trend

VISCOSITY





Machine Id LIEBHERR HS895 188297 Component

Component
Splitter Box

PETRO CANADA TRAXON 75W90 SYNTHETIC (--- GAL)

DIAGNOSIS

Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

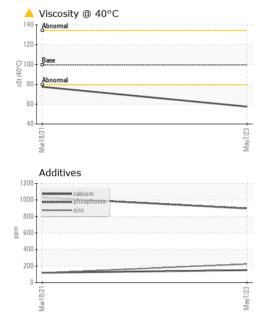
Fluid Condition

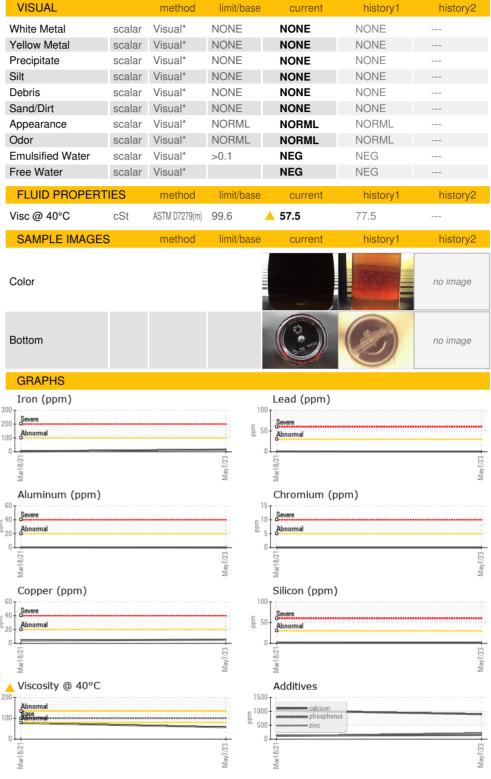
Viscosity of sample indicates oil is within SAE 80 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The condition of the oil is acceptable for the time in service.

75W90 SYNTHETIC (GAL)		Mar2021	May2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		LH0260275	LH0195192	
Sample Date		Client Info		07 May 2023	18 Mar 2021	
Machine Age	hrs	Client Info		13473	6156	
Oil Age	hrs	Client Info		0	0	
Oil Changed		Client Info		N/A	Changed	
Sample Status				ABNORMAL	NORMAL	
CONTAMINATION	V	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>100	16	3	
Chromium	ppm	ASTM D5185(m)	>5	0	0	
Nickel	ppm	ASTM D5185(m)	>5	0	<1	
Titanium	ppm	ASTM D5185(m)		0	0	
Silver	ppm	ASTM D5185(m)		0	<1	
Aluminum	ppm	ASTM D5185(m)	>20	0	<1	
Lead	ppm	ASTM D5185(m)	>30	<1	<1	
Copper	ppm	ASTM D5185(m)	>20	5	4	
Tin	ppm	ASTM D5185(m)	>10	0	0	
Antimony	ppm	ASTM D5185(m)	>5	0	0	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	0	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	328	159	247	
Barium	ppm	ASTM D5185(m)	1	0	<1	
Molybdenum	ppm	ASTM D5185(m)		0	<1	
Manganese	ppm	ASTM D5185(m)		<1	<1	
Magnesium	ppm	ASTM D5185(m)	1	3	3	
Calcium	ppm	ASTM D5185(m)	7	151	119	
Phosphorus	ppm	ASTM D5185(m)	1145	897	1028	
Zinc	ppm	ASTM D5185(m)	3	224	116	
Sulfur	ppm	ASTM D5185(m)	17909	11103	18331	
Lithium	ppm	ASTM D5185(m)		<1	<1	
CONTAMINANTS	;	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>30	2	2	
Sodium	ppm	ASTM D5185(m)	>25	1	<1	
Potassium	ppm	ASTM D5185(m)	>20	0	<1	

IFRHFRR

OIL ANALYSIS REPORT









Laboratory Sample No.

Test Package : MOB 1

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : LH0260275 Lab Number : 02556605 Unique Number : 5577645

Received **Tested**

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

: 10 May 2023 Diagnosed : 11 May 2023 - Kevin Marson

: 10 May 2023

To discuss this sample report, contact Customer Service at 1-800-268-2131.

St John, NB **CA E2J 4Y8** Contact: Darien Edison edison.darien@harbourdev.com T:

Harbour Develpment

380 Bayside Dr

Validity of results and interpretation are based on the sample and information as supplied. Report Id: HAR380STJ [WCAMIS] 02556605 (Generated: 05/17/2024 10:50:41) Rev: 1

Contact/Location: Darien Edison - HAR380STJ

F:

OIL ANALYSIS REPORT



WEAR



Machine Id LIEBHERR HS895 188297

Component Winch

PETRO CANADA TRAXON 75W90 SYNTHETIC (--- GAL

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

Wear

Iron ppm levels are abnormal.

Contamination

There is no indication of any contamination in the oil

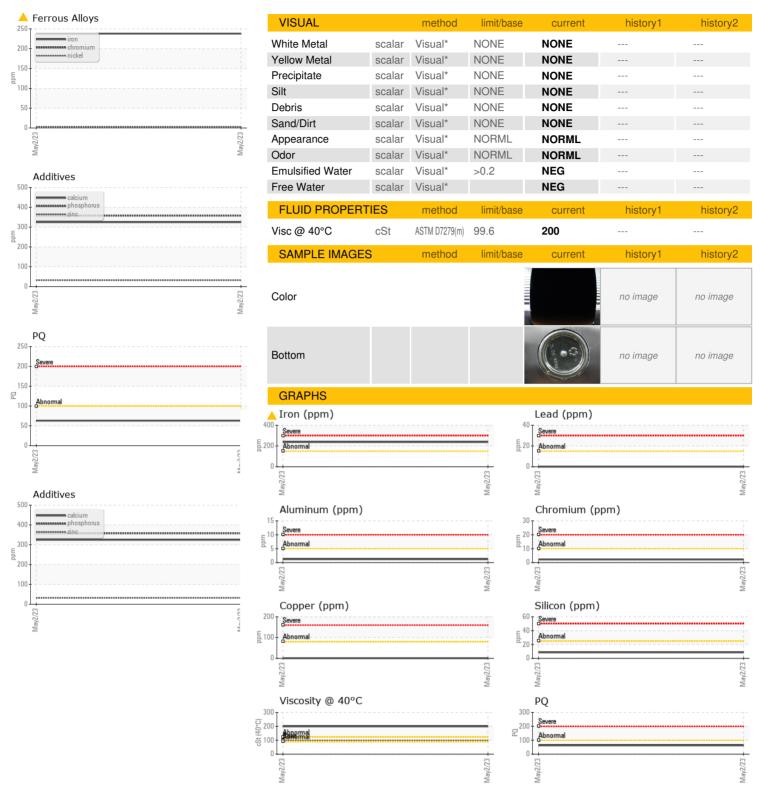
Fluid Condition

Viscosity of sample indicates oil is within SAE 90 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

75W90 SYNTHETIC ((GAL)			May2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		LH0260280		
Sample Date		Client Info		02 May 2023		
Machine Age	hrs	Client Info		13473		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				ABNORMAL		
CONTAMINATIO	N	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG		
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		63		
Iron	ppm	ASTM D5185(m)	>150	<u>^</u> 238		
Chromium	ppm	ASTM D5185(m)	>10	2		
Nickel	ppm	ASTM D5185(m)	>10	1		
Titanium	ppm	ASTM D5185(m)		<1		
Silver	ppm	ASTM D5185(m)		0		
Aluminum	ppm	ASTM D5185(m)	>5	1		
Lead	ppm	ASTM D5185(m)	>15	0		
Copper	ppm	ASTM D5185(m)	>80	<1		
Tin	ppm	ASTM D5185(m)		0		
Antimony	ppm	ASTM D5185(m)	>5	<1		
Vanadium	ppm	ASTM D5185(m)		0		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	328	8		
Barium	ppm	ASTM D5185(m)	1	1		
Molybdenum	ppm	ASTM D5185(m)		0		
Manganese	ppm	ASTM D5185(m)		2		
Magnesium	ppm	ASTM D5185(m)	1	4		
Calcium	ppm	ASTM D5185(m)	7	325		
Phosphorus	ppm	ASTM D5185(m)	1145	358		
Zinc	ppm	ASTM D5185(m)	3	31		
Sulfur	ppm	ASTM D5185(m)	17909	11535		
Lithium	ppm	ASTM D5185(m)		<1		
CONTAMINANTS	3	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	9		
Sodium	ppm	ASTM D5185(m)		4		
Potassium	ppm	ASTM D5185(m)	>20	7		

LIERHERR

OIL ANALYSIS REPORT





CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No.

Unique Number : 5577648

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 : LH0260280 Lab Number : 02556608

Received Tested Diagnosed

: 10 May 2023 Test Package : MOB 1 (Additional Tests: PQ)

: 11 May 2023 - Kevin Marson

: 10 May 2023

CA E2J 4Y8 Contact: Darien Edison edison.darien@harbourdev.com

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

T:

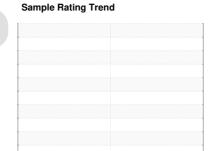
F:

Harbour Develpment

380 Bayside Dr

St John, NB

OIL ANALYSIS REPORT



NORMAL





Machine Id LIEBHERR HS895 188297 Component

Component
Luffing Winch

PETRO CANADA TRAXON 75W90 SYNTHETIC (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

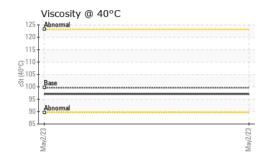
There is no indication of any contamination in the oil

Fluid Condition

The condition of the oil is acceptable for the time in service.

75W90 SYNTHETIC (GAL)	<u> </u>		May2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		LH0260279		
Sample Date		Client Info		02 May 2023		
Machine Age	hrs	Client Info		13473		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				NORMAL		
CONTAMINATIO	N	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>150	8		
Chromium	ppm	ASTM D5185(m)	>10	0		
Nickel	ppm	ASTM D5185(m)	>10	0		
Titanium	ppm	ASTM D5185(m)		0		
Silver	ppm	ASTM D5185(m)		0		
Aluminum	ppm	ASTM D5185(m)	>5	<1		
Lead	ppm	ASTM D5185(m)	>15	<1		
Copper	ppm	ASTM D5185(m)	>80	1		
Tin	ppm	ASTM D5185(m)		0		
Antimony	ppm	ASTM D5185(m)	>5	0		
Vanadium	ppm	ASTM D5185(m)		0		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	328	312		
Barium	ppm	ASTM D5185(m)	1	0		
Molybdenum	ppm	ASTM D5185(m)		0		
Manganese	ppm	ASTM D5185(m)		0		
Magnesium	ppm	ASTM D5185(m)	1	2		
Calcium	ppm	ASTM D5185(m)	7	9		
Phosphorus	ppm	ASTM D5185(m)	1145	1387		
Zinc	ppm	ASTM D5185(m)	3	19		
Sulfur	ppm	ASTM D5185(m)	17909	22158		
Lithium	ppm	ASTM D5185(m)		<1		
CONTAMINANTS	3	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	2		
Sodium	ppm	ASTM D5185(m)		<1		
Potassium	ppm	ASTM D5185(m)	>20	0		

OIL ANALYSIS REPORT



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE		
Yellow Metal	scalar	Visual*	NONE	NONE		
Precipitate	scalar	Visual*	NONE	NONE		
Silt	scalar	Visual*	NONE	NONE		
Debris	scalar	Visual*	NONE	NONE		
Sand/Dirt	scalar	Visual*	NONE	NONE		
Appearance	scalar	Visual*	NORML	NORML		
Odor	scalar	Visual*	NORML	NORML		
Emulsified Water	scalar	Visual*	>0.2	NEG		
Free Water	scalar	Visual*		NEG		
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	99.6	97.1		
VISC W 40°C	USI	MOTIVI D/2/9(III)	33.0	31.1		

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				no image	no image
Bottom			OS NOW	no image	no image
GRAPHS					

Bottom		no ima	ge no image
GRAPHS			
Iron (ppm)		Lead (ppm)	
400 Severe		Severe	
Abnormal		Abnormal Abnormal	
0 🙀	2	0	-
May2/23	May2/23	May2/23	May2/23
Aluminum (ppm)		Chromium (ppm)	
Severe	1	Severe	
Abnormal		20 o Severe Abnormal	
0	2	0	
May2/23	May2/23	May2/23	May2/23
Copper (ppm)		Silicon (ppm)	
O-vere		40	
Abnormal		20	
/23 	- 123	V33 10	/23
May2/23	May2/23	May2/23	May2/23
Viscosity @ 40°C		Additives	
Abnormal		1500 calcium	
Abnormal Base		1000 - calcium hannanan phosphorus 500 - calcium	
80		23	53
May2/23	May2/23	May2/23	Мау2/23
_	_	_	_



CALA ISO 17025:2017 Accredited Laboratory

Test Package : MOB 1

Sample No. : LH0260279 **Lab Number** : 02556610 Unique Number : 5577650

Laboratory: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received : 10 May 2023 Tested : 10 May 2023 : 10 May 2023 - Wes Davis Diagnosed

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. **Harbour Develpment**

380 Bayside Dr St John, NB CA E2J 4Y8

Contact: Darien Edison edison.darien@harbourdev.com

T: F:

Validity of results and interpretation are based on the sample and information as supplied.

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL





Machine Id **LIEBHERR HS895 188297** Component 1 Winch

PETRO CANADA TRAXON 75W90 SYNTHETIC (--- LTR)

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

Fluid Condition

The condition of the oil is acceptable for the time in service.

75W90 SYNTHETIC ((LTR)		Mar2021	May2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		LH0260277	LH0195191	
Sample Date		Client Info		02 May 2023	18 Mar 2021	
Machine Age	hrs	Client Info		13473	6156	
Oil Age	hrs	Client Info		0	0	
Oil Changed		Client Info		N/A	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINATION	V	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>150	34	24	
Chromium	ppm	ASTM D5185(m)	>10	<1	<1	
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	
Titanium	ppm	ASTM D5185(m)		0	0	
Silver	ppm	ASTM D5185(m)		0	<1	
Aluminum	ppm	ASTM D5185(m)	>5	0	<1	
Lead	ppm	ASTM D5185(m)	>15	0	<1	
Copper	ppm	ASTM D5185(m)	>80	3	1	
Tin	ppm	ASTM D5185(m)		0	0	
Antimony	ppm	ASTM D5185(m)	>5	0	0	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	0	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	328	313	312	
Barium	ppm	ASTM D5185(m)	1	7	3	
Molybdenum	ppm	ASTM D5185(m)		0	<1	
Manganese	ppm	ASTM D5185(m)		<1	<1	
Magnesium	ppm	ASTM D5185(m)	1	4	2	
Calcium	ppm	ASTM D5185(m)	7	13	10	
Phosphorus	ppm	ASTM D5185(m)	1145	1357	1215	
Zinc	ppm	ASTM D5185(m)	3	10	7	
Sulfur	ppm	ASTM D5185(m)	17909	22168	21920	
Lithium	ppm	ASTM D5185(m)		<1	<1	
CONTAMINANTS	;	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	4	2	
Sodium	ppm	ASTM D5185(m)		<1	<1	
Potassium	ppm	ASTM D5185(m)	>20	<1	0	

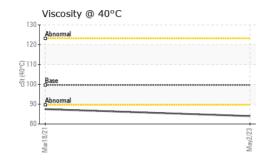
EBHERR

OIL ANALYSIS REPORT

cSt

ASTM D7279(m) 99.6

Visc @ 40°C

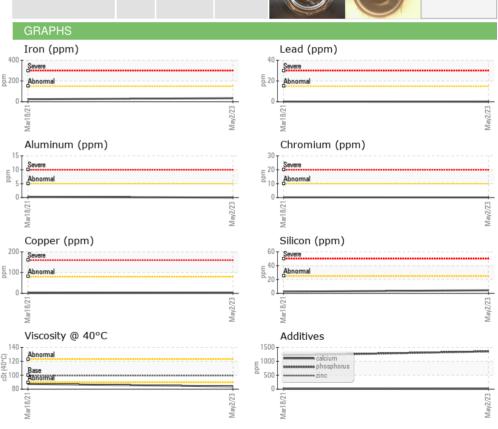


VISUAL		method				history2
White Metal	scalar	Visual*	NONE	NONE	NONE	
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	
Precipitate	scalar	Visual*	NONE	NONE	NONE	
Silt	scalar	Visual*	NONE	NONE	NONE	
Debris	scalar	Visual*	NONE	NONE	NONE	
Sand/Dirt	scalar	Visual*	NONE	NONE	VLITE	
Appearance	scalar	Visual*	NORML	NORML	NORML	
Odor	scalar	Visual*	NORML	NORML	NORML	
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	
Free Water	scalar	Visual*		NEG	NEG	
FLUID PROPERT	TIES	method	limit/base	current	history1	history2

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					no image
Bottom					no image
GBAPHS					

84.0

87.5





CALA ISO 17025:2017 Accredited Laboratory

Laboratory

Sample No. : LH0260277 Lab Number : 02556606 Unique Number : 5577646 Test Package : MOB 1

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received : 10 May 2023 Tested : 10 May 2023 Diagnosed : 10 May 2023 - Wes Davis

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. **Harbour Develpment**

380 Bayside Dr St John, NB CA E2J 4Y8

Contact: Darien Edison edison.darien@harbourdev.com

T: F:

Validity of results and interpretation are based on the sample and information as supplied. Report Id: HAR380STJ [WCAMIS] 02556606 (Generated: 05/17/2024 10:51:07) Rev: 1

Contact/Location: Darien Edison - HAR380STJ

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL





Machine Id **LIEBHERR HS895 188297** Component 2 Winch

Fluid PETRO CANADA TRAXON

Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

Fluid Condition

The condition of the oil is acceptable for the time in service.

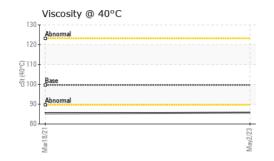
75W90 SYNTHETIC (GAL)		Mar2021	May2023		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		LH0260278	LH0195194	
Sample Date		Client Info		02 May 2023	18 Mar 2021	
Machine Age	hrs	Client Info		13473	6156	
Oil Age	hrs	Client Info		0	0	
Oil Changed		Client Info		N/A	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINATIO	N	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>150	32	24	
Chromium	ppm	ASTM D5185(m)	>10	0	<1	
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	
Titanium	ppm	ASTM D5185(m)		0	0	
Silver	ppm	ASTM D5185(m)		2	<1	
Aluminum	ppm	ASTM D5185(m)	>5	0	<1	
Lead	ppm	ASTM D5185(m)	>15	<1	<1	
Copper	ppm	ASTM D5185(m)	>80	2	1	
Tin	ppm	ASTM D5185(m)		0	0	
Antimony	ppm	ASTM D5185(m)	>5	0	0	
Vanadium	ppm	ASTM D5185(m)		0	0	
Beryllium	ppm	ASTM D5185(m)		0	0	
Cadmium	ppm	ASTM D5185(m)		0	0	
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)	328	313	311	
Barium	ppm	ASTM D5185(m)	1	5	2	
Molybdenum	ppm	ASTM D5185(m)		0	<1	
Manganese	ppm	ASTM D5185(m)		<1	<1	
Magnesium	ppm	ASTM D5185(m)	1	3	2	
Calcium	ppm	ASTM D5185(m)	7	10	9	
Phosphorus	ppm	ASTM D5185(m)	1145	1350	1214	
Zinc	ppm	ASTM D5185(m)	3	10	9	
Sulfur	ppm	ASTM D5185(m)	17909	21765	21817	
Lithium	ppm	ASTM D5185(m)		<1	<1	
CONTAMINANTS	3	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>25	3	2	
Sodium	ppm	ASTM D5185(m)		<1	<1	
Potassium	ppm	ASTM D5185(m)	>20	0	<1	

OIL ANALYSIS REPORT

cSt

ASTM D7279(m) 99.6

Visc @ 40°C

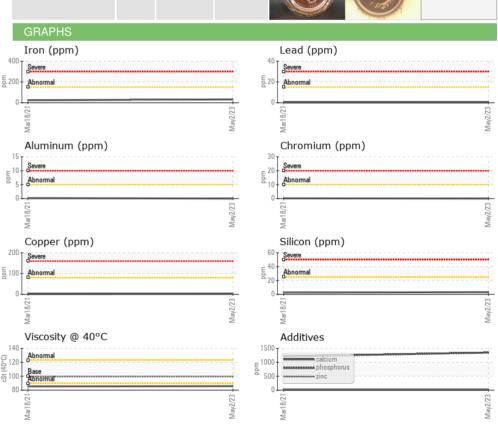


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	
Precipitate	scalar	Visual*	NONE	NONE	NONE	
Silt	scalar	Visual*	NONE	NONE	NONE	
Debris	scalar	Visual*	NONE	VLITE	NONE	
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	
Appearance	scalar	Visual*	NORML	NORML	NORML	
Odor	scalar	Visual*	NORML	NORML	NORML	
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	
Free Water	scalar	Visual*		NEG	NEG	
FLUID PROPERT	IES	method	limit/base	current	history1	history2

SAMPLE IMAGES	method	limit/base	current	history1	history2
Color				7	no image
Bottom				() () () () () () () () () ()	no image
GRAPHS					

85.8

85.3





CALA ISO 17025:2017 Accredited Laboratory

Laboratory **Sample No.** : LH0260278 Lab Number : 02556607 Unique Number : 5577647 Test Package : MOB 1

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

Received : 10 May 2023 Tested : 10 May 2023 Diagnosed

: 10 May 2023 - Wes Davis

To discuss this sample report, contact Customer Service at 1-800-268-2131.

CA E2J 4Y8 Contact: Darien Edison edison.darien@harbourdev.com T:

Harbour Develpment

380 Bayside Dr

St John, NB

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.