

OIL ANALYSIS REPORT

Turret [167845]

777-2 Primary System (WH-167845) (S/N Sample Tag: NC-29602 WH-167845)

Heat Transfer Fluid

SHELL THERMIA B (--- GAL)

Sample Rating Trend



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. LUBE360 Oil Diagnostics recommends using HTTFL sample kits for heat transfer fluids. Please contact us at 1-800-268-2131 and provide a purchase order for \$245 + HST in order to conduct additional testing (boiling points @ 10%, 50%, and 90%, percent boiling < 335°C, and solids) to determine the suitability for continued use. Please contact your representative for information regarding the proper sampling kits for your service.

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Fluid Condition

The AN level is acceptable for this fluid.

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0080215	PC	PC
Sample Date		Client Info		27 May 2024	18 Dec 2019	05 Jul 2019
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
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Water		WC Method	>0.0601	NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>200	0	0	0
Chromium	ppm	ASTM D5185(m)	>21	0	<1	0
Nickel	ppm	ASTM D5185(m)	>21	0	<1	0
Titanium	ppm	ASTM D5185(m)	>21	0	0	0
Silver	ppm	ASTM D5185(m)	>21	0	0	0
Aluminum	ppm	ASTM D5185(m)	>21	0	0	0
Lead	ppm	ASTM D5185(m)	>21	0	<1	<1
Copper	ppm	ASTM D5185(m)	>21	0	<1	<1
Tin	ppm	ASTM D5185(m)	>21	0	0	0
Antimony	ppm	ASTM D5185(m)	>21	0	<1	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base	current 0	history1 <1	history2 0
	ppm ppm		limit/base			
Boron		ASTM D5185(m)	limit/base	0	<1	0
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	limit/base	0 0	<1	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	0 0 0	<1 0 <1	0 0 0
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	0 0 0 0	<1 0 <1 0	0 0 0 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	0 0 0 0 <1	<1 0 <1 0 <1	0 0 0 <1 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	0 0 0 0 <1	<1 0 <1 0 <1 <1	0 0 0 <1 <1 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base	0 0 0 0 <1 0 267	<1 0 <1 0 <1 <1 <1 247	0 0 0 <1 <1 <1 <1 243
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base	0 0 0 0 <1 0 267	<1 0 <1 0 <1 <1 <1 247 2	0 0 0 <1 <1 <1 <1 243
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base	0 0 0 0 <1 0 267 1 684	<1 0 <1 0 <1 <1 <1 247 2 589	0 0 0 <1 <1 <1 243 2 598
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)		0 0 0 0 <1 0 267 1 684	<1 0 <1 0 <1 <1 <1 247 2 589 <1	0 0 0 <1 <1 <1 <1 243 2 598 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base	0 0 0 0 <1 0 267 1 684 <1	<1 0 <1 0 <1 <1 <1 247 2 589 <1	0 0 0 <1 <1 <1 <1 243 2 598 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) Method ASTM D5185(m)	limit/base	0 0 0 0 <1 0 267 1 684 <1	<1 0 <1 0 <1 <1 247 2 589 <1 history1	0 0 0 <1 <1 <1 243 2 598 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base >25 >21	0 0 0 0 <1 0 267 1 684 <1 current	<1 0 <1 0 <1 <1 <1 247 2 589 <1 history1 <1	0 0 0 <1 <1 <1 <1 243 2 598 0 history2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANL	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base >25 >21 >20	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0	<1 0 <1 0 <1 <1 247 2 589 <1 history1 <1 0 <1	0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANL Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	limit/base >25 >21 >20 limit/base	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 1573	0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANL Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D5185(m)	limit/base >25 >21 >20 limit/base >10240000	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 1573 187	0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANL Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	limit/base >25 >21 >20 limit/base >10240000 >10240000	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0 current 1431 297 13	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 1573 187 7	0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2 598
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Ptuld CLEANL Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	limit/base >25 >21 >20 limit/base >10240000 >10240000 >2560000	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0 current 1431 297 13 4	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 history1 1573 187 7 2	0 0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2 598 51 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANL Particles >4µm Particles >14µm Particles >21µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	limit/base >25 >21 >20 limit/base >10240000 >10240000 >2560000 >640000	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0 current 1431 297 13 4 0	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 1573 187 7 2 0	0 0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2 598 51 1 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Ptuld CLEANL Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) Method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	limit/base >25 >21 >20 limit/base >10240000 >10240000 >2560000	0 0 0 0 0 <1 0 267 1 684 <1 current 0 <1 0 current 1431 297 13 4	<1 0 <1 0 <1 0 <1 247 2 589 <1 history1 <1 0 <1 history1 1573 187 7 2	0 0 0 <1 <1 <1 243 2 598 0 history2 <1 0 <1 history2

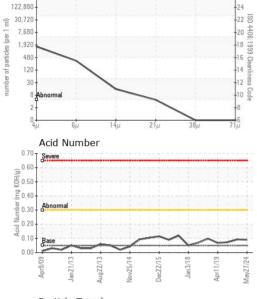
Contact/Location: Josh Hynes - TERHAM



Particle Count

OIL ANALYSIS REPORT

FLUID DEGRADATION method



Acid Number (AN)	mg KOH/g	ASTM D974*	0.05	0.09	0.093	0.073
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	VLITE	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*	>0.0601	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	35.2	45.6	45.2	44.8
SAMPLE IMAG	iES	method	limit/base	current	history1	history2

8k - "	4μm 6μm						
-	14µп						
6k		1		1			
4k -							
2k -					1	1	
Ok Apr9/09		بمميمي	URREAR.		Jan3/18		100

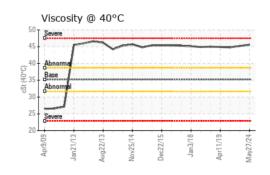


Particle Trend ver of particles (1 ml) Dec22/15

GRAPHS

Color

Bottom





CALA ISO 17025:2017 Accredited Laboratory

Report Id: TERHAM [WCAMIS] 02638033 (Generated: 05/29/2024 13:27:06) Rev: 1

Sample No. Lab Number : 02638033 Unique Number : 5787195

Laboratory : PC0080215

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received : 28 May 2024

Tested : 29 May 2024 Diagnosed

: 29 May 2024 - Kevin Marson Test Package : IND 2 (Additional Tests: PRTCOUNT, TAN Man)

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.

Suncor - Terra Nova Projects Scotia Centre, 235 Water Strret

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