

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

VILTER TYSOMA 19 VILTER (S/N TDSH193L3129D)

Refrigeration Compressor

USPI 1009-68 SC (--- 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. The amount and size of particulates present in the system are acceptable.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

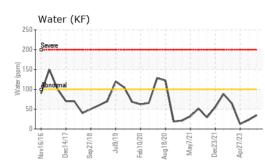
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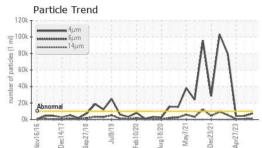


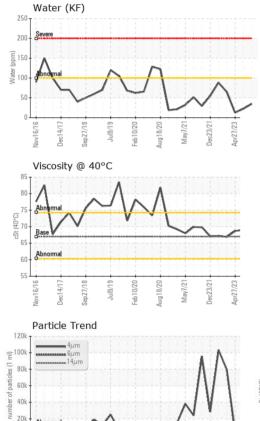
Sample Number Client Info USP0003258 USP000752 USP248319 Sample Date Client Info 30 Oct 2023 31 Jul 2023 27 Apr 2023 Machine Age hrs Client Info 7405 5683 3783 Oil Age Client Info N/A N/A N/A N/A Sample Status Elient Info N/A N/A N/A N/A VEAR METALS method Imit/base current history1 history2 Iron ppm ASTM 05185m >8 0 0 -1 Nickel ppm ASTM 05185m 2 0 -1 0 Aluminum ppm ASTM 05185m 2 0 -1 0 Gopper ppm ASTM 05185m 2 0 -1 0 -1 Vanadium ppm ASTM 05185m 2 0 -1 0 -1 Gradmium ppm ASTM 05185m 2 0 -1 0	SAMPLE INFORM	1ATION	method	limit/base	current	history1	history2
Sample Date Client Info 30 Oct 2023 31 Jul 2023 27 Apr 2023 Machine Age hrs Client Info 7405 5683 3783 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status 0 0 0 0 0 WEAR METALS method Imit/base current history1 history1 Nickel ppm ASTM 05185m >8 0 0 -1 Nickel ppm ASTM 05185m 2 0 0 -1 Lead ppm ASTM 05185m 2 0 0 -1 Vanadium ppm ASTM 05185m 2 0 0 -1 Vanadium ppm ASTM 05185m 0 0 0 0 Addimium ppm ASTM 05185m 0 0 0 -1 Vanadium ppm							
Machine Age hrs Client Info 7405 5683 3783 Oil 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 Imit/base current history1 history2 Iron ppm ASTM D5185m >2 0 0 <1							
Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status method limit/base current history1 history2 Iron ppm ASTM 05155m >8 0 0 -1 Nickel ppm ASTM 05155m >2 0 -1 0 Silver ppm ASTM 05155m >2 0 -1 0 Auminum ppm ASTM 05155m >2 0 -1 0 Auminum ppm ASTM 05155m 2 0 -1 0 Auminum ppm ASTM 05155m 2 0 0 -1 Capper ppm ASTM 05155m 2 0 0 -1 Vanadium ppm ASTM 05155m 0 0 0 0 Capper ppm ASTM 05155m 0 0 0 0		bro					
Oil Changed Sample Status Client Info N/A N/A N/A N/A WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >8 0 0 0 Chromium ppm ASTM D5185m >2 0 0 <1	•						
Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >8 0 0 <1	•	1115					
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >8 0 0 0 Nickel ppm ASTM D5185m >2 0 0 <1	U		Client Inio				
Iron ppm ASTM D5185m >8 0 0	Sample Status				NORMAL	NORMAL	NORIVIAL
Ppm ASTM D5185m >2 0 0 <1 Nickel ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 2 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m 0 0 <1 Titanium ppm ASTM D5185m >2 0 <1	Iron	ppm	ASTM D5185m	>8			0
Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >2 0 <1	Chromium	ppm	ASTM D5185m	>2	0	0	<1
Silver ppm ASTM D5185m >2 0 <1 0 Aluminum ppm ASTM D5185m >3 0 0 <1	Nickel	ppm	ASTM D5185m		0	0	<1
Aluminum ppm ASTM D5185m >3 0 0 <1 Lead ppm ASTM D5185m >2 0 0 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >2 0 0 <1 Copper ppm ASTM D5185m >8 0 0 <1	Silver	ppm	ASTM D5185m	>2	0	<1	0
Copper ppm ASTM D5185m >8 0 0 <1 Tin ppm ASTM D5185m >4 0 0 <1	Aluminum	ppm	ASTM D5185m	>3	0	0	<1
Tin ppm ASTM D5185m >4 0 0 <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 Magnaese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Phosphorus ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >20 0 <1	Lead	ppm	ASTM D5185m	>2	0	0	<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 Maganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m 50 0 1 1 Sodium ppm ASTM D5185m 20 0 <1	Copper	ppm	ASTM D5185m	>8	0	0	<1
Cadmium ppm ASTM D5185m 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 Molybdenum ppm ASTM D5185m 0 0 0 0 Magnese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 0 0 0 1 Sodium ppm ASTM D5185m 20 0 1 1 Sodium ppm ASTM D5185m 20 0 1 2	Tin	ppm	ASTM D5185m	>4	0	0	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Zinc ppm ASTM D5185m 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m 20 0 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Magnese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m <1	Cadmium		ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Maganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Zinc ppm ASTM D5185m 50 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >20 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 <1	Boron	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 0 0 0 Calcium ppm ASTM D5185m 0 0 0 Phosphorus ppm ASTM D5185m 0 0 0 Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >20 0 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 0 0 0 0 Phosphorus ppm ASTM D5185m <1	Manganese	ppm	ASTM D5185m		0	0	<1
Phosphorus ppm ASTM D5185m <1 0 0 Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 0 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >15 0 0 1 Potassium ppm ASTM D5185m >20 0 <1 2 Water % ASTM D5185m >20 0 <1 2 Water % ASTM D5034 >0.01 0.003 0.002 0.001 ppm ASTM D7647 >1000 7344 4315 4217 Particles >4µm ASTM D7647 >200 1093 694 671 Particles >14µm ASTM D7647 >20 0 0 0 0 <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Magnesium	ppm	ASTM D5185m		0	0	0
Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 0 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >20 0 <1 2 Water % ASTM D6304 >0.01 0.003 0.002 0.001 ppm ASTM D6304 >0.01 0.003 0.002 0.001 ppm ASTM D6304 >100 34.8 22.4 12.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 7344 4315 4217 Particles >1µm ASTM D7647 2500 1093 694	Calcium	ppm	ASTM D5185m		0	0	0
Sulfur ppm ASTM D5185m 50 0 0 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >15 0 0 <1	Phosphorus	ppm	ASTM D5185m		<1	0	0
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m >15 0 0 <1	Zinc	ppm	ASTM D5185m		0	0	0
Silicon ppm ASTM D5185m >15 0 0 1 Sodium ppm ASTM D5185m 0 0 <1	Sulfur	ppm	ASTM D5185m	50	0	0	0
Sodium ppm ASTM D5185m 0 0 <1 Potassium ppm ASTM D5185m >20 0 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 <1 2 Water % ASTM D6304 >0.01 0.003 0.002 0.001 ppm Water ppm ASTM D6304 >100 34.8 22.4 12.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >10000 7344 4315 4217 Particles >6μm ASTM D7647 >2500 1093 694 671 Particles >14μm ASTM D7647 >320 13 11 19 Particles >21μm ASTM D7647 >80 2 1 5 Particles >38μm ASTM D7647 >20 0 0 0 Particles >71μm ASTM D7647 >4 0 0 0 0 OIl Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 <td>Silicon</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <th>0</th> <td>0</td> <td>1</td>	Silicon	ppm	ASTM D5185m	>15	0	0	1
Water % ASTM D6304 >0.01 0.003 0.002 0.001 ppm Water ppm ASTM D6304 >100 34.8 22.4 12.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 7344 4315 4217 Particles >6µm ASTM D7647 >2500 1093 694 671 Particles >14µm ASTM D7647 >320 13 11 19 Particles >21µm ASTM D7647 >80 2 1 5 Particles >38µm ASTM D7647 >20 0 0 0 Particles >71µm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	0	<1
Water % ASTM D6304 >0.01 0.003 0.002 0.001 ppm Water ppm ASTM D6304 >100 34.8 22.4 12.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 7344 4315 4217 Particles >6µm ASTM D7647 >2500 1093 694 671 Particles >14µm ASTM D7647 >320 13 11 19 Particles >21µm ASTM D7647 >80 2 1 5 Particles >38µm ASTM D7647 >20 0 0 0 Particles >71µm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	0	<1	2
ppm Water ppm ASTM D6304 >100 34.8 22.4 12.6 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 7344 4315 4217 Particles >6µm ASTM D7647 >2500 1093 694 671 Particles >6µm ASTM D7647 >320 13 11 19 Particles >14µm ASTM D7647 >80 2 1 5 Particles >21µm ASTM D7647 >20 0 0 0 Particles >38µm ASTM D7647 >4 0 0 0 Particles >71µm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Water		ASTM D6304	>0.01	0.003	0.002	0.001
Particles >4μm ASTM D7647 >10000 7344 4315 4217 Particles >6μm ASTM D7647 >2500 1093 694 671 Particles >14μm ASTM D7647 >320 13 11 19 Particles >21μm ASTM D7647 >80 2 1 5 Particles >21μm ASTM D7647 >80 2 1 5 Particles >38μm ASTM D7647 >20 0 0 0 Particles >71μm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	ppm Water	ppm	ASTM D6304	>100	34.8	22.4	12.6
Particles >6μm ASTM D7647 >2500 1093 694 671 Particles >14μm ASTM D7647 >320 13 11 19 Particles >21μm ASTM D7647 >80 2 1 5 Particles >38μm ASTM D7647 >20 0 0 0 Particles >38μm ASTM D7647 >20 0 0 0 Particles >38μm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14µm ASTM D7647 >320 13 11 19 Particles >21µm ASTM D7647 >80 2 1 5 Particles >38µm ASTM D7647 >20 0 0 0 Particles >38µm ASTM D7647 >20 0 0 0 Particles >71µm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm		ASTM D7647	>10000	7344	4315	4217
Particles >21μm ASTM D7647 >80 2 1 5 Particles >38μm ASTM D7647 >20 0 0 0 Particles >38μm ASTM D7647 >20 0 0 0 Particles >71μm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>2500	1093	694	671
Particles >38μm ASTM D7647 >20 0 0 0 Particles >71μm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm		ASTM D7647	>320	13	11	19
Particles >71μm ASTM D7647 >4 0 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>80	2	1	5
Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >38µm		ASTM D7647	>20	0	0	0
Oil Cleanliness ISO 4406 (c) >20/18/15 20/17/11 19/17/11 19/17/11 FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm		ASTM D7647	>4	0	0	0
			ISO 4406 (c)	>20/18/15	20/17/11	19/17/11	19/17/11
Acid Number (AN) mg KOH/g ASTM D974 0.005 0.014 0.014 0.031	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D974	0.005	0.014	0.014	0.031



OIL ANALYSIS REPORT







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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	>0.01	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	67	67.3	69.0	68.7
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
Color				NH3 - 540 War 4582 War 50190 War 5000 War 500		
Bottom						

Particle Count Ferrous Alloys 491 520 122,88 30,72 7,68 20 2 Dec14/17 Sep27/18 ah10/70 Ja 18/20 lov16/16 4406 Der 1,920 19999 Non-ferrous Metals 480 10 120 2 de 30 Dec14/1 ar73/7 Vov16/1 Sep27/ 611 Viscosity @ 40°C Acid Number (⁰,0.05 HOX 0.04 90 Ē 0.03 ළි 0.02 Abnormal 0.01 0.00 50 Apr27/23 -Mav7/21 Dec23/21 Dec23/21 pr27/23 May7/21 9/19/19 ah10/70 1/19/19



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

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