

OIL ANALYSIS REPORT

Sample Rating Trend



LS-2 (S/N 09302-004-1-01-02)

Refrigeration Compressor

USPI ALT-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 component. The amount and size of particulates present in the system is acceptable.

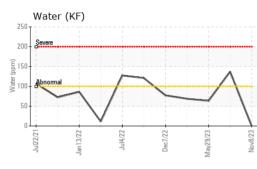
Fluid Condition

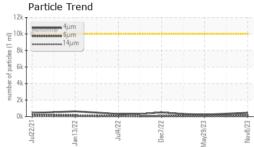
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

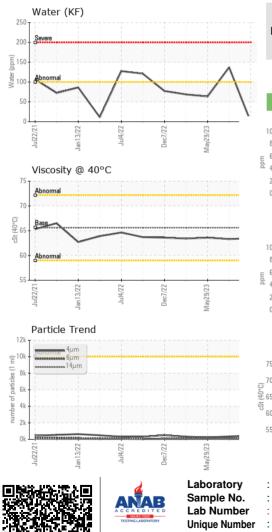
Sample Date Client Info 08 Nov 2023 16 Aug 2023 29 May 2023 Machine Age hrs Client Info 10089 0 0 Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status method imit/base current history1 history2 Iron ppm ASTM D5185m >8 <1	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 10089 0 0 Oil Age hrs Client Info 0 N/A N/A N/A Sample Status Client Info N/A NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165m >8 <1 0 0 Chromium ppm ASTM D5165m <1 0 0 Nickel ppm ASTM D5165m <1 0 0 Aluminum ppm ASTM D5165m <1 0 0 Aluminum ppm ASTM D5165m <1 0 0 Age 0 0 0 0 0 0 Vanadium ppm ASTM D5165m 0 0 0 0 Vanadium ppm ASTM D5165m 0 0 0 0 Vanadium ppm ASTM D5165m	Sample Number		Client Info		USP0003747	USP244623	USP245846
Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status nethod linit/base current history1 history2 Iron ppm ASTM D5185m >8 <1 0 0 Chromium ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >2 0 0 0 Copper ppm ASTM D5185m >2 0 0 0 Cadmium ppm ASTM D5185m >2 0 0 0 Cadmium ppm ASTM D5185m >4 0 0 0 Adminum ppm ASTM D5185m 0 0 0 0 Barinum ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>08 Nov 2023</th> <th>16 Aug 2023</th> <th>29 May 2023</th>	Sample Date		Client Info		08 Nov 2023	16 Aug 2023	29 May 2023
Dil Changed Sample Status Client Info N/A N/A N/A WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >8 <1 0 0 Chromium ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m <1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Copper ppm ASTM D5185m >2 0 0 0 Cadmium ppm ASTM D5185m >2 0 0 0 Vanadium ppm ASTM D5185m >2 0 0 0 Cadmium ppm ASTM D5185m >2 0 0 0 ASTM D5185m Ppm ASTM D5185m 0 0 0 0 Adamium ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnaese ppm ASTM D5185m 0 0 0 </th <th>Machine Age</th> <th>hrs</th> <th>Client Info</th> <th></th> <th>10089</th> <th>0</th> <th>0</th>	Machine Age	hrs	Client Info		10089	0	0
Sample Status NORMAL NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >2 <1	Oil Age	hrs	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >8 <1 0 0 Chromium ppm ASTM D5185m >2 <1 0 0 Nickel ppm ASTM D5185m <1 0 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >2 0 0 0 Copper ppm ASTM D5185m >4 0 0 0 Copper ppm ASTM D5185m 0 0 0 0 </th <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>N/A</th> <th>N/A</th> <th>N/A</th>	Oil Changed		Client Info		N/A	N/A	N/A
Iron ppm ASTM D5185m >8 <1	Sample Status				NORMAL	NORMAL	NORMAL
Chromium ppm ASTM D5185m >2 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>8	<1	0	0
Titanium ppm ASTM D5185m <1	Chromium	ppm	ASTM D5185m	>2	<1	0	0
Titanium ppm ASTM D5185m <1	Nickel	ppm	ASTM D5185m		<1	0	<1
Aluminum ppm ASTM D5185m >3 0 0 0 Lead ppm ASTM D5185m >2 0 0 <1 Copper ppm ASTM D5185m >8 0 0 0 Tin ppm ASTM D5185m >4 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method Imit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 16	Titanium		ASTM D5185m		<1	0	0
Aluminum ppm ASTM D5185m >3 0 0 0 Lead ppm ASTM D5185m >2 0 0 <1 Copper ppm ASTM D5185m >2 0 0 0 Tin ppm ASTM D5185m >4 0 0 0 Vanadium ppm ASTM D5185m >4 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 Magnese ppm ASTM D5185m 0 0 0 21 Magnesium ppm ASTM D5185m <1 0 0 21 Calcium ppm ASTM D5185m <0 0 0 21 Sulfur ppm ASTM D5185m 50 0 0 16	Silver	ppm	ASTM D5185m	>2	0	0	0
Lead ppm ASTM D5185m >2 0 0 <1	Aluminum		ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >8 0 0 0 Tin ppm ASTM D5185m >4 0 0 0 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 Magnese ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m <1 0 0 0 Vance ppm ASTM D5185m 0 0 0 0 Coltium ppm ASTM D5185m 50 0 0 16 Solium ppm ASTM D5185m >15 3 3 1	Lead		ASTM D5185m	>2	0	0	<1
Tin ppm ASTM D5185m >4 0 0 0 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 Magnese ppm ASTM D5185m 0 0 0 21 Magnesium ppm ASTM D5185m <1 0 0 0 Calcium ppm ASTM D5185m <1 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 0 Sulfur ppm ASTM D5185m 51 3 3 1 Potassium ppm ASTM D5185m >20 <1 0 1	Copper						
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 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 0 Magnesium ppm ASTM D5185m <1	Tin						
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m000BariumppmASTM D5185m000MolybdenumppmASTM D5185m000MaganeseppmASTM D5185m000MagnesiumppmASTM D5185m<100CalciumppmASTM D5185m<100PhosphorusppmASTM D5185m000ZincppmASTM D5185m000SulfurppmASTM D5185m50000CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>15331SodiumppmASTM D5185m>20<101PotassiumppmASTM D5185m>20<10.0130.006ppm WaterppASTM D6304>0.010.0011.37.063.4FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>250017112375Particles >14µmASTM D7647>320161312	Vanadium						0
Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m <<1 0 0 0 Calcium ppm ASTM D5185m <<1 0 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Zinc ppm ASTM D5185m 50 0 0 16 Sulfur ppm ASTM D5185m 50 0 0 1 Sodium ppm ASTM D5185m >15 3 3 1 Potassium ppm ASTM D5185m >20 <1 0 0.006<	Cadmium						
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m <1 0 0 Calcium ppm ASTM D5185m 0 0 0 0 Zinc ppm ASTM D5185m 50 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 16 1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >1 1 1 <1 Potassium ppm ASTM D5185m >20 <t< th=""><th>ADDITIVES</th><th></th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></t<>	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
Magnesse ppm ASTM D5185m 0 0 <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m <1	Manganese	ppm	ASTM D5185m		0	0	<1
Phosphorus ppm ASTM D5185m 0 0 0 Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 0 16 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 1 Sodium ppm ASTM D5185m >15 3 3 1 Potassium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m		<1	0	0
Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 16 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 1 Sodium ppm ASTM D5185m >15 3 3 1 Potassium ppm ASTM D5185m >20 <1 0 1 Vater % ASTM D6304 >0.01 0.001 0.013 0.006 ppm Water ppm ASTM D6304 >100 0.00 137.0 63.4 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 465 351 235 Particles >6µm ASTM D7647 >2500 171 123 75 Particles >14µm ASTM D7647 >320 16 13	Calcium	ppm	ASTM D5185m		<1	0	0
Zinc ppm ASTM D5185m 0 0 0 0 Sulfur ppm ASTM D5185m 50 0 0 16 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 3 3 1 Sodium ppm ASTM D5185m >15 3 3 1 Potassium ppm ASTM D5185m >20 <1 0 1 Vater % ASTM D6304 >0.01 0.001 0.013 0.006 ppm Water ppm ASTM D6304 >100 0.00 137.0 63.4 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 4655 351 235 Particles >14µm ASTM D7647 >2500 171 123 75	Phosphorus	ppm	ASTM D5185m		0	0	0
SulfurppmASTM D5185m500016CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>15331SodiumppmASTM D5185m>15331PotassiumppmASTM D5185m>20<101Water%ASTM D6304>0.010.0010.0130.006ppm WaterppmASTM D6304>1000.00137.063.4FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>10000465351235Particles >6µmASTM D7647>250017112375Particles >14µmASTM D7647>320161312	Zinc		ASTM D5185m		0	0	0
Silicon ppm ASTM D5185m >15 3 3 1 Sodium ppm ASTM D5185m 1 1 -1 -1 Potassium ppm ASTM D5185m >20 <1 0 1 Potassium ppm ASTM D5185m >20 <1 0 1 Water % ASTM D6304 >0.01 0.001 0.013 0.006 ppm Water ppm ASTM D6304 >100 0.00 137.0 63.4 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 465 351 235 Particles >6µm ASTM D7647 >2500 171 123 75 Particles >14µm ASTM D7647 >320 16 13 12	Sulfur		ASTM D5185m	50	0	0	16
Sodium ppm ASTM D5185m 1 1 <1	CONTAMINANTS	1	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1	Silicon	ppm	ASTM D5185m	>15	3	3	1
Water % ASTM D6304 >0.01 0.001 0.013 0.006 ppm Water ppm ASTM D6304 >100 0.00 137.0 63.4 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >10000 465 351 235 Particles >6μm ASTM D7647 >2500 171 123 75 Particles >14μm ASTM D7647 >320 16 13 12	Sodium	ppm	ASTM D5185m		1	1	<1
ppm Water ppm ASTM D6304 >100 0.00 137.0 63.4 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 465 351 235 Particles >6µm ASTM D7647 >2500 171 123 75 Particles >14µm ASTM D7647 >320 16 13 12	Potassium	ppm	ASTM D5185m	>20	<1	0	1
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >10000 465 351 235 Particles >6μm ASTM D7647 >2500 171 123 75 Particles >14μm ASTM D7647 >320 16 13 12	Water	%	ASTM D6304	>0.01	0.001	0.013	0.006
Particles >4μm ASTM D7647 >10000 465 351 235 Particles >6μm ASTM D7647 >2500 171 123 75 Particles >14μm ASTM D7647 >320 16 13 12	ppm Water	ppm	ASTM D6304	>100	0.00	137.0	63.4
Particles >6μm ASTM D7647 >2500 171 123 75 Particles >14μm ASTM D7647 >320 16 13 12	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >320 16 13 12	Particles >4µm		ASTM D7647	>10000	465	351	235
	Particles >6µm		ASTM D7647	>2500	171	123	75
Particles >21um ASTM D7647 >80 3 5 2	Particles >14µm		ASTM D7647	>320	16	13	12
	Particles >21µm		ASTM D7647	>80	3	5	2
Particles >38μm ASTM D7647 >20 0 0 0	Particles >38µm		ASTM D7647	>20	0	0	0
Particles >71μm ASTM D7647 >4 0 0 0	Particles >71µm		ASTM D7647	>4	0	0	0
Oil Cleanliness ISO 4406 (c) >20/18/15 16/15/11 16/14/11 15/13/11	Oil Cleanliness		ISO 4406 (c)	>20/18/15	16/15/11	16/14/11	15/13/11
FLUID DEGRADATION method limit/base current history1 history2	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D974 0.005 0.014 0.015 0.015	Acid Number (AN)	mg KOH/g	ASTM D974	0.005	0.014	0.015	0.015



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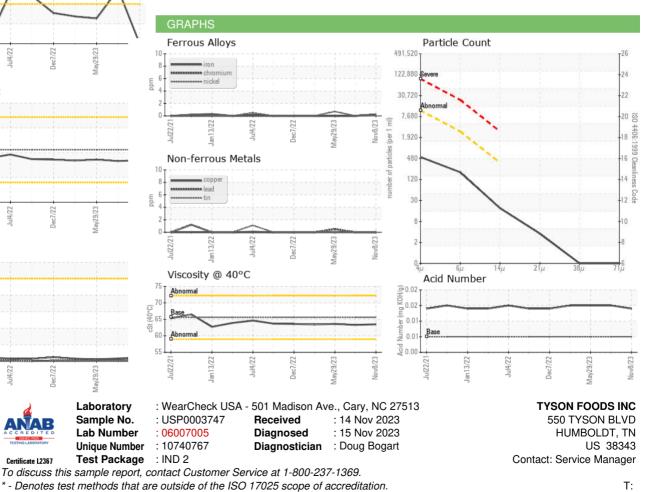






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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 PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	65.6	63.5	63.3	63.6
SAMPLE IMAGES		method	limit/base	current	history1	history2
Color				C CHR Angles An Angles An Chr Angles Angles Chr Chr Angles Chr	941 153 WC 10: 363 T75488	
				100		

Bottom



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

Certificate L2367

Contact/Location: Service Manager - TYSHUM

F: