

## **OIL ANALYSIS REPORT**

Machine Id

# FES C 19 (S/N 5112014)

Component Refrigeration Compressor Fluid

USPI ALT-68 SC (205 GAL)

### DIAGNOSIS

### A Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

There is a high amount of particulates present in the oil.

### **Fluid Condition**

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

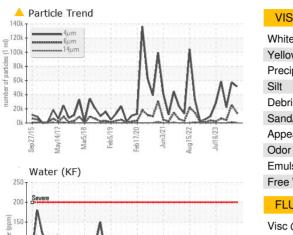
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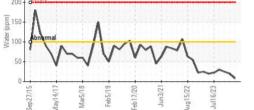
ISO

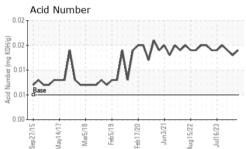
Sample Date     Client Info     02 Jun 2024     28 Feb 2024     07 Dec 20.       Machine Age     hrs     Client Info     0     0     0       Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A       Sample Status     Imit/base     current     History1     History1       VEAR METALS     method     Imit/base     current     History1     History1       Iron     ppm     ASTM D5185m     >8     <1     0     0       Tranium     ppm     ASTM D5185m     >2     o     0     0       Silver     ppm     ASTM D5185m     >2     o     0     0       Copper     ppm     ASTM D5185m     >2     o     0     0       Cadmium     ppm     ASTM D5185m     >4     <1     0     0       Cadmium     ppm     ASTM D5185m     <4     <1     0     0       Cadmium     ppm     ASTM D5185m </th <th>SAMPLE INFORM</th> <th>IATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
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     Client Info     N/A     ABNORMAL     ABTNAT     ATTENTIC       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >2     <1	Sample Number		Client Info		USP0012646	USP0007505	USP0004247
Oil Age     hrs     Client Info     0     0     0       Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     Client Info     N/A     ABNORMAL     ABNORMAL     ATTENTIC       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM 05185m     >8     <1	Sample Date		Client Info		02 Jun 2024	28 Feb 2024	07 Dec 2023
Oil Changed     Client Info     N/A     N/A     N/A     N/A       Sample Status     method     limit/base     current     history1     history1       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5165m     >2     <1	Machine Age	hrs	Client Info		0	0	0
Sample Status     method     limit/base     current     history1     ATTENTIC       WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5165m     >8     <1	Oil Age	hrs	Client Info		0	0	0
WEAR METALS     method     limit/base     current     history1     history1       Iron     ppm     ASTM D5185m     >8     <1	Oil Changed		Client Info		N/A	N/A	N/A
Iron     ppm     ASTM D5185m     >8     <1     0     0       Chromium     ppm     ASTM D5185m     >2     <1	Sample Status				ABNORMAL	ABNORMAL	ATTENTION
Chromium     ppm     ASTM D5185m     >2     <1     <1     <1       Nickel     ppm     ASTM D5185m     <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     <1     0     0       Titanium     ppm     ASTM D5185m     >2     0     0     0       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >2     1     0     0       Copper     ppm     ASTM D5185m     >8     <1	Iron	ppm	ASTM D5185m	>8	<1	0	0
Titanium     ppm     ASTM D5185m     <1     0     0       Silver     ppm     ASTM D5185m     >2     0     0     <1	Chromium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >3     0     0     <1	Nickel	ppm	ASTM D5185m		<1	0	0
Aluminum     ppm     ASTM D5185m     >3     0     0     <1       Lead     ppm     ASTM D5185m     >2     <1	Titanium	ppm	ASTM D5185m		<1	0	0
Lead     ppm     ASTM D5185m     >2     <1     0     0       Copper     ppm     ASTM D5185m     >8     <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper     ppm     ASTM D5185m     >8     <1     <1     0       Tin     ppm     ASTM D5185m     >4     <1	Aluminum	ppm	ASTM D5185m	>3	0	0	<1
Copper     ppm     ASTM D5185m     >8     <1     <1     0       Tin     ppm     ASTM D5185m     >4     <1	Lead		ASTM D5185m	>2	<1	0	0
Tin     ppm     ASTM D5185m     >4     <1     0     0       Vanadium     ppm     ASTM D5185m     <1	Copper		ASTM D5185m	>8	<1	<1	0
Vanadium     ppm     ASTM D5185m     <1     0     0       Cadmium     ppm     ASTM D5185m     <1	Tin		ASTM D5185m	>4	<1	0	0
Cadmium     ppm     ASTM D5185m     <1     0     0       ADDITIVES     method     limit/base     current     history1     history1       Boron     ppm     ASTM D5185m     0     0     0     0       Barium     ppm     ASTM D5185m     0     0     0     0       Manganese     ppm     ASTM D5185m     <1     0     0     0       Magnesium     ppm     ASTM D5185m     0     0     0     0       Calcium     ppm     ASTM D5185m     0     0     0     0       Contram     ppm     ASTM D5185m     0     0     0     0       Sulfur     ppm     ASTM D5185m     50     0     0     0     0       Sodium     ppm     ASTM D5185m     51     <1     0     <1     0       Sodium     ppm     ASTM D5185m     >20     2     0     0       Sodium     ppm     ASTM D5185m     >20     2     0	Vanadium				<1	0	0
Boron     ppm     ASTM D5185m     0     0     0       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     <1	Cadmium						0
Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum     ppm     ASTM D5185m     <1     0     0       Marganese     ppm     ASTM D5185m     0     <1	Boron	ppm	ASTM D5185m		0	0	0
Manganese     ppm     ASTM D5185m     0     <1     0       Magnesium     ppm     ASTM D5185m     <1	Barium	ppm	ASTM D5185m		0	0	0
Magnesium     ppm     ASTM D5185m     <1     0     0       Calcium     ppm     ASTM D5185m     0     0     0     0       Phosphorus     ppm     ASTM D5185m     0     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     history1       Silicon     ppm     ASTM D5185m     >15     <1	Molybdenum	ppm	ASTM D5185m		<1	0	0
Calcium     ppm     ASTM D5185m     0     0     0     0       Phosphorus     ppm     ASTM D5185m     0     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     history1       Silicon     ppm     ASTM D5185m     >15     <1	Manganese	ppm	ASTM D5185m		0	<1	0
Phosphorus     ppm     ASTM D5185m     0     0     0       Zinc     ppm     ASTM D5185m     50     0     0     0       Sulfur     ppm     ASTM D5185m     50     0     0     0       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >15     <1     0     <1       Sodium     ppm     ASTM D5185m     >15     <1     0     <1       Potassium     ppm     ASTM D5185m     >20     2     0     0       Water     %     ASTM D6304     >0.01     0.001     0.002     0.002       ppm     ASTM D7647     >20     8     20     25       FLUID CLEANLINESS     method     limit/base     current     history1     history1       Particles >4µm     ASTM D7647     >2500     14224     25593     4128       Particles >14µm     ASTM D7647     >320     377     1380     174	Magnesium	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     history       Silicon     ppm     ASTM D5185m     >15     <1	Calcium	ppm	ASTM D5185m		0	0	0
Sulfur     ppm     ASTM D5185m     50     0     0     0       CONTAMINANTS     method     limit/base     current     history1     history1       Silicon     ppm     ASTM D5185m     >15     <1     0     <1       Sodium     ppm     ASTM D5185m     >15     <1     0     <1       Potassium     ppm     ASTM D5185m     >20     2     0     0       Water     %     ASTM D50304     >0.01     0.001     0.002     0.002       ppm Water     ppm     ASTM D6304     >100     8     20     25       FLUID CLEANLINESS     method     limit/base     current     history1     history       Particles >4µm     ASTM D7647     >2500     14224     25593     4128       Particles >6µm     ASTM D7647     >320     377     1380     174       Particles >1µm     ASTM D7647     >20     0     0     1       Particles >21µm     ASTM D7647     >20     0     0     1	Phosphorus	ppm	ASTM D5185m		0	0	0
CONTAMINANTS     method     limit/base     current     history1     history       Silicon     ppm     ASTM D5185m     >15     <1	Zinc	ppm	ASTM D5185m		0	0	0
Silicon   ppm   ASTM D5185m   >15   <1   0   <1     Sodium   ppm   ASTM D5185m   >10   1   <1   0   <1     Potassium   ppm   ASTM D5185m   >20   2   0   0     Potassium   ppm   ASTM D5185m   >20   2   0   0     Water   %   ASTM D6304   >0.01   0.001   0.002   0.002     ppm Water   ppm   ASTM D6304   >100   8   20   25     FLUID CLEANLINESS   method   limit/base   current   history1   history1     Particles >4µm   ASTM D7647   >2500   14224   25593   4128     Particles >6µm   ASTM D7647   >320   377   1380   174     Particles >1µm   ASTM D7647   >20   0   0   1     Particles >38µm   ASTM D7647   >40   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/18     FLUID DEGRADATION   method   limit/base <thc< td=""><td>Sulfur</td><td>ppm</td><td>ASTM D5185m</td><td>50</td><th>0</th><td>0</td><td>0</td></thc<>	Sulfur	ppm	ASTM D5185m	50	0	0	0
Sodium     ppm     ASTM D5185m     1     <1     0       Potassium     ppm     ASTM D5185m     >20     2     0     0       Water     %     ASTM D6304     >0.01     0.001     0.002     0.002       ppm Water     ppm     ASTM D6304     >100     8     20     25       FLUID CLEANLINESS     method     limit/base     current     history1     history       Particles >4µm     ASTM D7647     51659     57459     22057       Particles >6µm     ASTM D7647     >2500     14224     25593     4128       Particles >14µm     ASTM D7647     >320     377     1380     174       Particles >21µm     ASTM D7647     >80     31     150     25       Particles >38µm     ASTM D7647     >20     0     0     1       Particles >71µm     ASTM D7647     >4     0     0     22/19/19       OIl Cleanliness     ISO 4406 (c)     >/18/15     23/21/16     23/22/18     22/19/19	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     2     0     0       Water     %     ASTM D6304     >0.01     0.001     0.002     0.002       ppm     Water     ppm     ASTM D6304     >100     8     20     25       FLUID CLEANLINESS     method     limit/base     current     history1     history1       Particles >4µm     ASTM D7647     51659     57459     22057       Particles >6µm     ASTM D7647     >2500     14224     25593     4128       Particles >14µm     ASTM D7647     >320     377     1380     174       Particles >21µm     ASTM D7647     >20     0     0     1       Particles >38µm     ASTM D7647     >20     0     1     25       Particles >71µm     ASTM D7647     >4     0     0     0     0     22/19/19       FLUID DEGRADATION     method     limit/base     current     history1     history1	Silicon	ppm	ASTM D5185m	>15	<1	0	<1
Water   %   ASTM D6304   >0.01   0.001   0.002   0.002     ppm   Water   ppm   ASTM D6304   >100   8   20   25     FLUID CLEANLINESS   method   limit/base   current   history1   history1     Particles >4µm   ASTM D7647   51659   57459   22057     Particles >6µm   ASTM D7647   >2500   14224   25593   4128     Particles >14µm   ASTM D7647   >320   377   1380   174     Particles >21µm   ASTM D7647   >20   0   1   25     Particles >38µm   ASTM D7647   >20   0   1   25     Particles >71µm   ASTM D7647   >4   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/19     FLUID DEGRADATION   method   limit/base   current   history1   history1	Sodium	ppm	ASTM D5185m		1	<1	0
ppm Water     ppm     ASTM D6304     >100     8     20     25       FLUID CLEANLINESS     method     limit/base     current     history1     history1       Particles >4µm     ASTM D7647     51659     57459     22057       Particles >6µm     ASTM D7647     >2500     14224     25593     4128       Particles >14µm     ASTM D7647     >320     377     1380     174       Particles >21µm     ASTM D7647     >80     31     150     25       Particles >38µm     ASTM D7647     >20     0     0     1       Particles >71µm     ASTM D7647     >4     0     0     0       Oil Cleanliness     ISO 4406 (c)    /18/15     23/21/16     23/22/18     22/19/19       FLUID DEGRADATION     method     limit/base     current     history1     history1	Potassium	ppm	ASTM D5185m	>20	2	0	0
FLUID CLEANLINESS   method   limit/base   current   history1   history1     Particles >4µm   ASTM D7647   51659   57459   22057     Particles >6µm   ASTM D7647   >2500   14224   25593   4128     Particles >14µm   ASTM D7647   >320   377   1380   174     Particles >21µm   ASTM D7647   >80   31   150   25     Particles >21µm   ASTM D7647   >20   0   0   1     Particles >38µm   ASTM D7647   >20   0   0   1     Particles >71µm   ASTM D7647   >4   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/19     FLUID DEGRADATION   method   limit/base   current   history1   history1	Water	%	ASTM D6304	>0.01	0.001	0.002	0.002
Particles >4μm   ASTM D7647   51659   57459   22057     Particles >6μm   ASTM D7647   >2500   14224   25593   4128     Particles >14μm   ASTM D7647   >320   377   1380   174     Particles >21μm   ASTM D7647   >80   31   150   25     Particles >21μm   ASTM D7647   >20   0   0   1     Particles >38μm   ASTM D7647   >20   0   0   1     Particles >71μm   ASTM D7647   >4   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/14     FLUID DEGRADATION   method   limit/base   current   history1   history	ppm Water	ppm	ASTM D6304	>100	8	20	25
Particles >6µm   ASTM D7647   >2500   14224   25593   4128     Particles >14µm   ASTM D7647   >320   377   1380   174     Particles >21µm   ASTM D7647   >80   31   150   25     Particles >38µm   ASTM D7647   >20   0   0   1     Particles >38µm   ASTM D7647   >20   0   0   1     Particles >71µm   ASTM D7647   >4   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/19     FLUID DEGRADATION   method   limit/base   current   history1   history	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14µm   ASTM D7647   >320   ▲ 377   ▲ 1380   174     Particles >21µm   ASTM D7647   >80   31   ● 150   25     Particles >38µm   ASTM D7647   >20   0   0   1     Particles >38µm   ASTM D7647   >20   0   0   1     Particles >71µm   ASTM D7647   >4   0   0   0     Oil Cleanliness   ISO 4406 (c)   >/18/15   ▲ 23/21/16   ▲ 23/22/18   ● 22/19/19     FLUID DEGRADATION   method   limit/base   current   history1   history	Particles >4µm		ASTM D7647		51659	57459	22057
Particles >21μm     ASTM D7647     >80     31     150     25       Particles >38μm     ASTM D7647     >20     0     0     1       Particles >37μm     ASTM D7647     >4     0     0     0       Oil Cleanliness     ISO 4406 (c)     >/18/15     23/21/16     23/22/18     22/19/19       FLUID DEGRADATION     method     limit/base     current     history1     history1	Particles >6µm		ASTM D7647	>2500	<u> </u>	<b>A</b> 25593	4128
Particles >38μm     ASTM D7647     >20     0     0     1       Particles >71μm     ASTM D7647     >4     0     0     0       Oil Cleanliness     ISO 4406 (c)     >/18/15     23/21/16     23/22/18     22/19/19       FLUID DEGRADATION     method     limit/base     current     history1     history1	Particles >14µm		ASTM D7647	>320	<b>A</b> 377	<b>1</b> 380	174
Particles >71μm     ASTM D7647     >4     0     0     0       Oil Cleanliness     ISO 4406 (c)     >/18/15 <b>23/21/16</b> 23/22/18     22/19/19       FLUID DEGRADATION     method     limit/base     current     history1     history1	Particles >21µm		ASTM D7647	>80	31	150	25
Oil Cleanliness   ISO 4406 (c)   >/18/15   23/21/16   23/22/18   22/19/19     FLUID DEGRADATION   method   limit/base   current   history1   history1	Particles >38µm		ASTM D7647	>20	0	0	1
Oil Cleanliness   ISO 4406 (c) >/18/15   23/21/16   23/22/18   22/19/18     FLUID DEGRADATION   method   limit/base   current   history1   history2	Particles >71µm		ASTM D7647	>4	0	0	0
· · · · · · · · · · · · · · · · · · ·	Oil Cleanliness		ISO 4406 (c)	>/18/15	<b>4</b> 23/21/16	▲ 23/22/18	22/19/15
Acid Number (AN)     mg KOH/g     ASTM D974     0.005     0.014     0.013     0.014	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D974	0.005	0.014	0.013	0.014

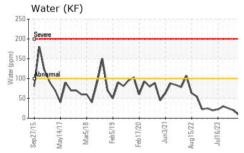


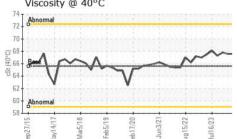
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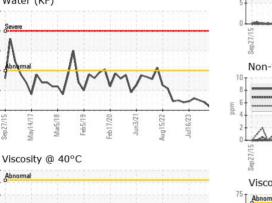


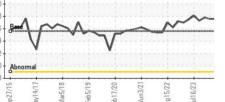








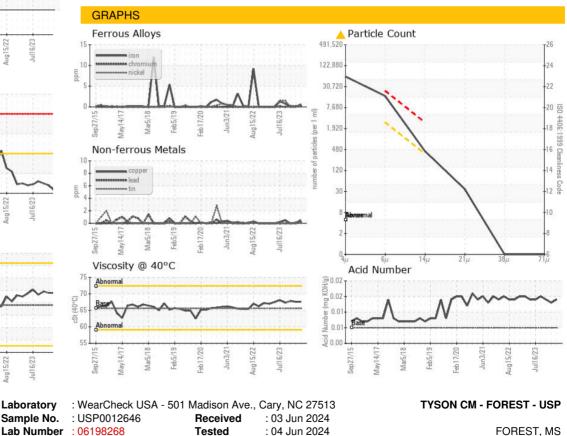




Certificate 12367



Bottom



Diagnosed : 06 Jun 2024 - Doug Bogart

US Contact: SERVICE MANAGER

- To discuss this sample report, contact Customer Service at 1-800-237-1369.
- \* Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Unique Number : 11060391

Test Package : IND 2

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

Report Id: TYSFORMS [WUSCAR] 06198268 (Generated: 06/07/2024 22:16:15) Rev: 1

Contact/Location: SERVICE MANAGER - TYSFORMS

T:

F: