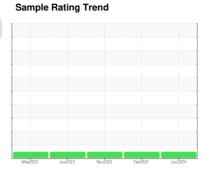


OIL ANALYSIS REPORT

E9 RULer Conductivity SOLAR E9 Solar Titan 130

Gas Turbine

ROYAL PURPLE SYNFILM 32 (1081 GAL)





DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. Conductivity is acceptable at 689 pS. Please submit a sample of the new (unused) oil to update the baseline. (Customer Sample Comment: Annual PM filter changed sample taken)

Wear

All component wear rates are normal.

Contamination

MPC (Membrane Patch Colorimetry) test indicates acceptable levels of varnish present. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

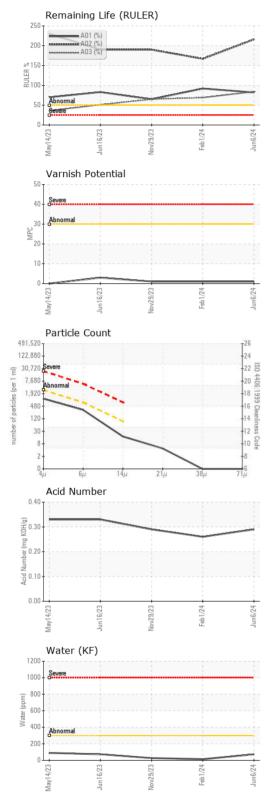
Fluid Condition

The AN level is acceptable for this fluid. Linear Sweep Voltammetry (RULER - ASTM D6971) testing indicates normal levels of anti-oxidants present in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION method limit/base current history1 history2							
Sample Date Client Info 96 Jun 2024 01 Feb 2024 29 Nov 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 9235 6808 5519 Oil Age hrs Client Info 9235 6808 5343 Oil Changed Client Info Not Changed N/A N/A Sample Status NORMAL NORMAL NORMAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 0 0 0 Chromium ppm ASTM D5185m >4 0 0 0 Chromium ppm ASTM D5185m >4 0 0 0 Oil Chromium ppm ASTM D5185m >4 0 0 0 Oil Chromium ppm ASTM D5185m >4 0 0 0 0 Oil Chromium ppm ASTM D5185m >4 0 0 0 0 Silver ppm ASTM D5185m >0 0 0 0 Oil Chromium ppm ASTM D5185m >10 0 0 0 Oil Chromium ppm ASTM D5185m >10 0 0 0 Oil Chromium ppm ASTM D5185m >5 2 2 2 0 Tin ppm ASTM D5185m >5 2 2 2 0 0 Copper ppm ASTM D5185m >5 0 0 0 0 Cadmium ppm ASTM D5185m >5 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 ASTM D5185m 20 0 0 0 0 ASTM D5185m 20 0	Sample Number		Client Info		WC0885351	WC0885355	WC0877337
Oil Age hrs Client Info 9235 6808 5343 Oil Changed Client Info Not Changd N/A N/A Sample Status method limit/bass current history1 history2 Iron ppm ASTM D5185m >15 0 0 0 Chromium ppm ASTM D5185m >4 0 0 0 Nickel ppm ASTM D5185m >4 0 0 0 Nickel ppm ASTM D5185m >2 0 0 0 Alluminum ppm ASTM D5185m 0 0 0 0 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >5 2 2 2 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 <	Sample Date		Client Info		06 Jun 2024	01 Feb 2024	29 Nov 2023
Oil Changed Sample Status Client Info Not Changd NORMAL N/A N/A WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m -15 0 0 0 0 Chromium ppm ASTM D5185m -4 0 0 0 0 Nickel ppm ASTM D5185m -4 0 0 0 0 Nickel ppm ASTM D5185m -4 0 0 0 0 0 Silver ppm ASTM D5185m 0	Machine Age	hrs	Client Info		9235	6808	5519
Sample Status	Oil Age	hrs	Client Info		9235	6808	5343
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >15 0 0 0 Chromium ppm ASTM D5185m >2 0 0 0 Nickel ppm ASTM D5185m 0 0 0 0 Titanium ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Lead ppm ASTM D5185m 0 0 0 0 Copper ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Not Changd</th> <th>N/A</th> <th>N/A</th>	Oil Changed		Client Info		Not Changd	N/A	N/A
Iron	Sample Status				NORMAL	NORMAL	NORMAL
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Titanium	Chromium	ppm	ASTM D5185m	>4	0	0	0
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Aluminum ppm ASTM D5185m >10 0 0 0 Lead ppm ASTM D5185m 0 0 0 0 Copper ppm ASTM D5185m >5 2 2 0 Tin ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 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 Magnesium ppm ASTM D5185m 0 0 0 0 Calcium ppm ASTM D5185m 15 0 17 0 Phosphorus ppm ASTM D5185m 16 0 10 10 </th <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Titanium	ppm	ASTM D5185m		0	0	0
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ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 4 Molybdenum ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m >15 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 6 0 4 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 15 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1 0 <1 Sodium ppm ASTM D5185m >20 0 0 0 Vater % ASTM D5185m >20 0 0 0 Water % ASTM D6304 >0.03 0.007 0.001 0.003 ppm Water ppm <t< td=""><td>Boron</td><td>ppm</td><td>ASTM D5185m</td><td></td><th>0</th><td>0</td><td>0</td></t<>	Boron	ppm	ASTM D5185m		0	0	0
Manganese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Barium	ppm	ASTM D5185m		6	0	4
Magnesium ppm ASTM D5185m 90 69 43 78 Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 15 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 15 0 17 Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Manganese	ppm	ASTM D5185m		0	0	0
Phosphorus ppm ASTM D5185m 20 0 13 Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Magnesium	ppm	ASTM D5185m	90	69	43	78
Zinc ppm ASTM D5185m 14 0 10 Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Calcium	ppm	ASTM D5185m		15	0	17
Sulfur ppm ASTM D5185m 19332 17342 16974 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Phosphorus	ppm	ASTM D5185m		20	0	13
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 <1	Zinc	ppm	ASTM D5185m		14	0	10
Silicon ppm ASTM D5185m >15 <1	Sulfur	ppm	ASTM D5185m		19332	17342	16974
Sodium ppm ASTM D5185m 16 16 10 Potassium ppm ASTM D5185m >20 0 0 0 Water % ASTM D6304 >0.03 0.007 0.001 0.003 ppm Water ppm ASTM D6304 >300 72 14 27 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 974 301 259 Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	CONTAMINANTS	;	method	limit/base	current	history1	history2
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Water % ASTM D6304 >0.03 0.007 0.001 0.003 ppm Water ppm ASTM D6304 >300 72 14 27 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 974 301 259 Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Sodium	ppm	ASTM D5185m		16	16	10
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Potassium	ppm	ASTM D5185m	>20	0	0	0
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4μm ASTM D7647 >2500 974 301 259 Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Water	%	ASTM D6304	>0.03	0.007	0.001	0.003
Particles >4μm ASTM D7647 >2500 974 301 259 Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	ppm Water	ppm	ASTM D6304	>300	72	14	27
Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >6μm ASTM D7647 >640 280 91 81 Particles >14μm ASTM D7647 >80 15 11 6 Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	Particles >4µm		ASTM D7647	>2500	974	301	259
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Particles >21μm ASTM D7647 >20 4 4 1 Particles >38μm ASTM D7647 >4 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0	•						
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Particles >71μm ASTM D7647 >3 0 0 0	·						0
	•			>3	0	0	0
	·			>18/16/13			



OIL ANALYSIS REPORT



FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.29	0.26	0.29
Anti-Oxidant 1	%	ASTM D6971	<25	82	92	65
Anti-Oxidant 2	%	ASTM D6971	<25	216	167	190
Anti-Oxidant 3	%	ASTM D6971	<25	84	69	65
MPC Varnish Potential	Scale	ASTM D7843	>15	1	1	1
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	>0.03	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	32	31.94	32.2	32.1
Resistivity	Gohm/cm	ASTM D1169		689	292	283
SAMPLE IMAGES	;	method	limit/base	current	history1	history2
Color						
Bottom						
MPC				w442	çqqs	Cus





Certificate 12367

Laboratory

Sample No. Unique Number : 11073953

: WC0885351 Lab Number : 06206492

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.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 11 Jun 2024

Test Package : AOM 1 (Additional Tests: Conductivity, KF, Resistivity)

Tested : 20 Jun 2024 : 20 Jun 2024 - Doug Bogart Diagnosed

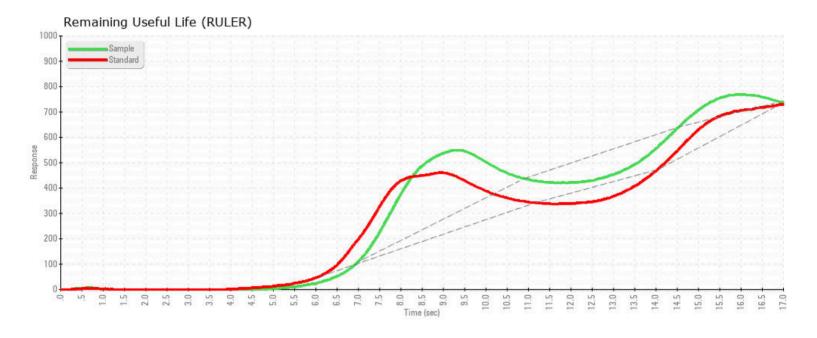
Conoco Phillips ALASKA INC C/O LAF (ALPINE), 6441 S AIRPARK PL ANCHORAGE, AK US 99502

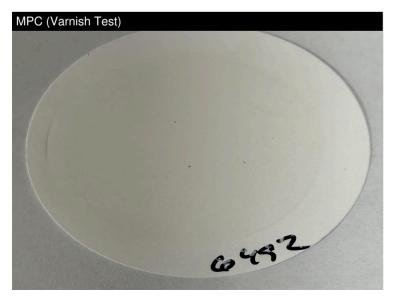
Contact: Chris Van Ryzin Ben DeRaeve alp1084@conocophillips.com

T: (907)670-4128 F: (907)670-4137

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: CONANCAK [WUSCAR] 06206492 (Generated: 06/20/2024 11:28:21) Rev: 1

Submitted By: Chris Van Ryzin Ben DeRaeve







Report Id: CONANCAK [WUSCAR] 06206492 (Generated: 06/20/2024 11:28:27) Rev: 1

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