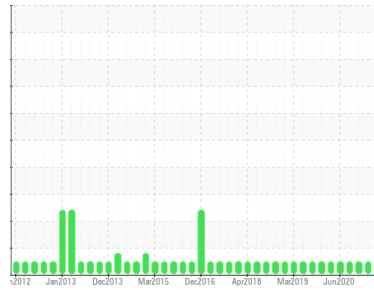




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id

GTRB-1510A Main Gas Turbine

Component

Tank Turbine

Fluid

PHILLIPS 66 Diamond Class® Turbine Oil AW 32 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

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

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 Number	Client Info		HLC0001653	HLC0001413	HLC0001347
Sample Date	Client Info		30 Dec 2021	08 Dec 2021	08 Dec 2021
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

WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >15	0	6	0
Chromium	ppm	ASTM D5185m >4	0	0	0
Nickel	ppm	ASTM D5185m >2	0	0	0
Titanium	ppm	ASTM D5185m	0	0	0
Silver	ppm	ASTM D5185m	<1	0	<1
Aluminum	ppm	ASTM D5185m >10	0	0	0
Lead	ppm	ASTM D5185m	0	0	0
Copper	ppm	ASTM D5185m >5	0	0	0
Tin	ppm	ASTM D5185m >5	0	0	0
Antimony	ppm	ASTM D5185m	0	0	0
Vanadium	ppm	ASTM D5185m	0	0	0
Cadmium	ppm	ASTM D5185m	0	0	0

ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	<1	<1
Barium	ppm	ASTM D5185m	0	0	0
Molybdenum	ppm	ASTM D5185m	<1	0	0
Manganese	ppm	ASTM D5185m	0	0	0
Magnesium	ppm	ASTM D5185m	0	0	0
Calcium	ppm	ASTM D5185m	0	0	0
Phosphorus	ppm	ASTM D5185m	27	9	33
Zinc	ppm	ASTM D5185m	0	0	0
Sulfur	ppm	ASTM D5185m	756	29	681

CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >15	<1	<1	<1
Sodium	ppm	ASTM D5185m	0	0	0
Potassium	ppm	ASTM D5185m >20	0	0	0
Water	%	ASTM D6304 >0.03	0.001	---	---
ppm Water	ppm	ASTM D6304 >300	2.6	---	---

FLUID CLEANLINESS

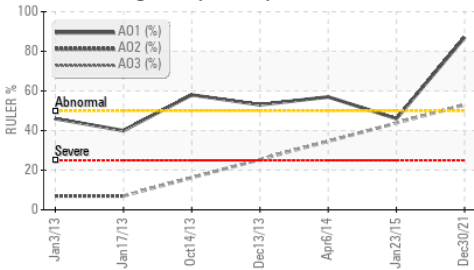
	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		54	194	180
Particles >6µm	ASTM D7647 >1300		24	66	49
Particles >14µm	ASTM D7647 >160		2	10	7
Particles >21µm	ASTM D7647 >40		0	3	1
Particles >38µm	ASTM D7647 >10		0	0	0
Particles >71µm	ASTM D7647 >3		0	0	0
Oil Cleanliness	ISO 4406 (c)	>--/17/14	13/12/9	15/13/10	15/13/10



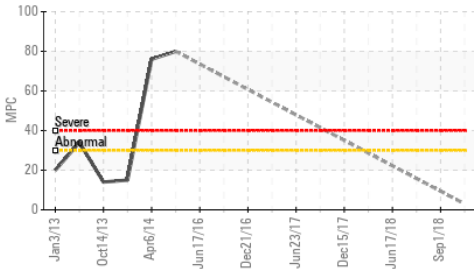
Hilcorp Alaska, LLC

OIL ANALYSIS REPORT

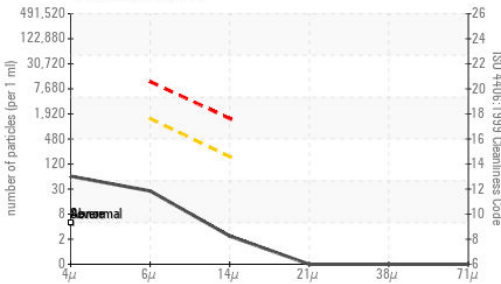
Remaining Life (RULER)



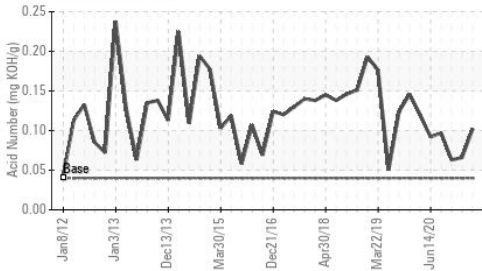
Varnish Potential



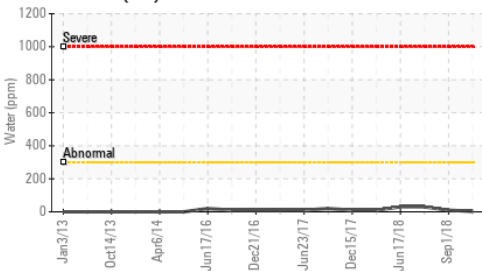
Particle Count



Acid Number



Water (KF)



FLUID DEGRADATION	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	0.04	0.102	0.066	0.063
Anti-Oxidant 1	%	ASTM D6971	<25	87	---	---
Anti-Oxidant 2	%	ASTM D6971	<25	53	---	---
MPC Varnish Potential	Scale	ASTM D7843	>15	3	---	---

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 PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D445	32.7	31.9	32.7	31.9

SAMPLE IMAGES	method	limit/base	current	history1	history2
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Color					
Bottom					
MPC		no image	no image		



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : HLC0001653

Lab Number : **05440137**

Unique Number : 9804330

Test Package : AOM 1 (Additional Tests: KF)

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.

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

Received : 10 Jan 2022

Tested : 21 Jan 2022

Diagnosed : 21 Jan 2022 - Doug Bogart

HILCORP ALASKA LLC - ENDICOTT

604 WAREHOUSE ENDICOTT

PRUDHOE BAY, AK

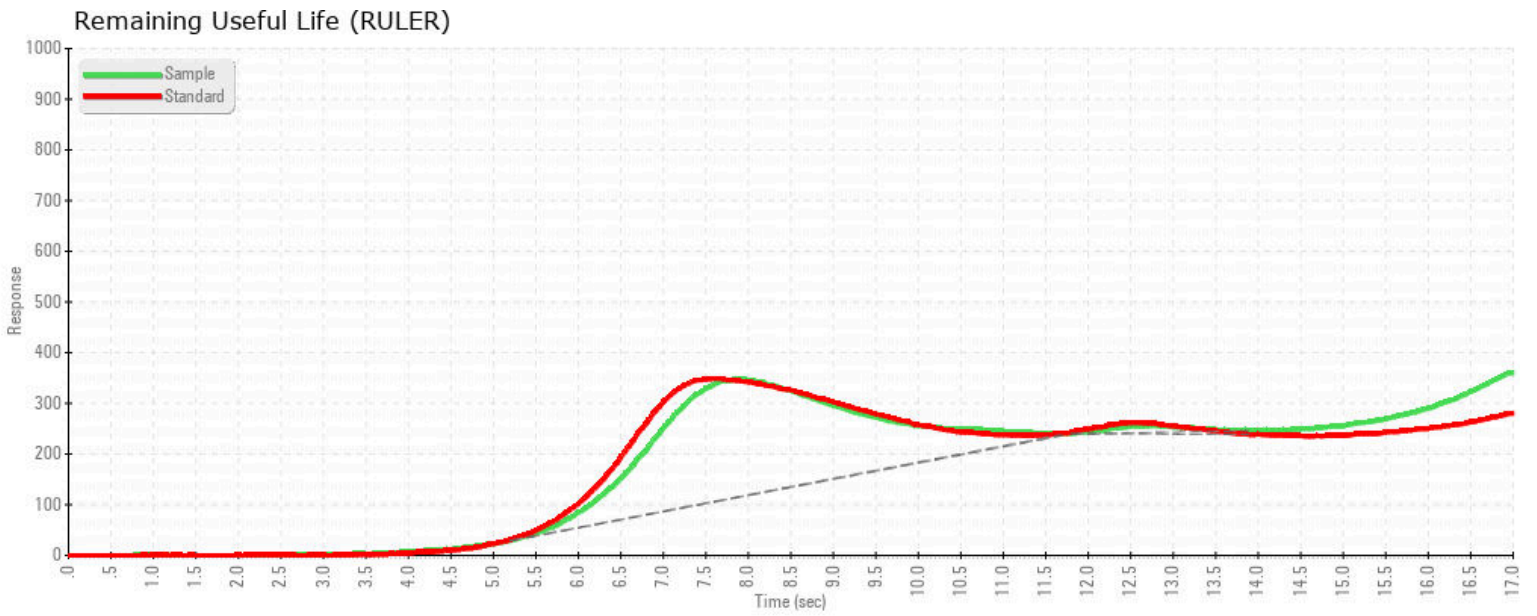
US 99734

Contact: SEAN LOWTHER

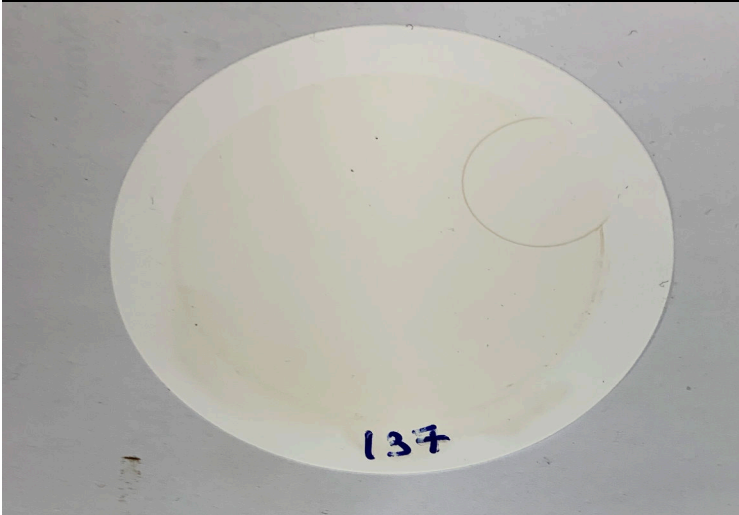
slowther@hilcorp.com

T: (907)659-6800

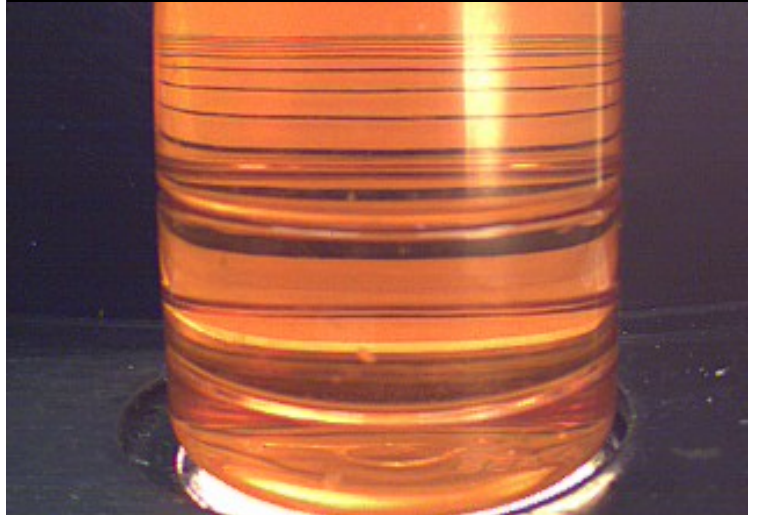
F:



MPC (Varnish Test)



Sample Color & Clarity



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