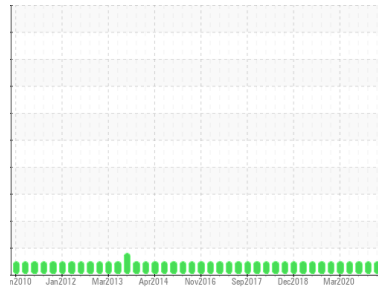




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id

## GTRB-1510B 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	<b>HLC0001654</b>	HLC0001348	HLC0000411
Sample Date	Client Info	<b>30 Dec 2021</b>	08 Dec 2021	06 Dec 2020
Machine Age	hrs Client Info	<b>0</b>	0	0
Oil Age	hrs Client Info	<b>0</b>	0	0
Oil Changed	Client Info	<b>N/A</b>	N/A	N/A
Sample Status		<b>NORMAL</b>	NORMAL	NORMAL

### WEAR METALS

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

### ADDITIVES

method	limit/base	current	history1	history2
Boron ppm ASTM D5185m		<b>0</b>	<1	<1
Barium ppm ASTM D5185m		<b>0</b>	0	0
Molybdenum ppm ASTM D5185m		<b>&lt;1</b>	0	0
Manganese ppm ASTM D5185m		<b>0</b>	0	0
Magnesium ppm ASTM D5185m		<b>0</b>	0	0
Calcium ppm ASTM D5185m		<b>0</b>	<1	0
Phosphorus ppm ASTM D5185m		<b>26</b>	41	26
Zinc ppm ASTM D5185m		<b>0</b>	0	0
Sulfur ppm ASTM D5185m		<b>212</b>	263	71

### CONTAMINANTS

method	limit/base	current	history1	history2
Silicon ppm ASTM D5185m	>15	<b>&lt;1</b>	2	<1
Sodium ppm ASTM D5185m		<b>0</b>	0	<1
Potassium ppm ASTM D5185m	>20	<b>0</b>	0	0
Water % ASTM D6304	>0.03	<b>0.001</b>	---	---
ppm Water ppm ASTM D6304	>300	<b>7.8</b>	---	---

### FLUID CLEANLINESS

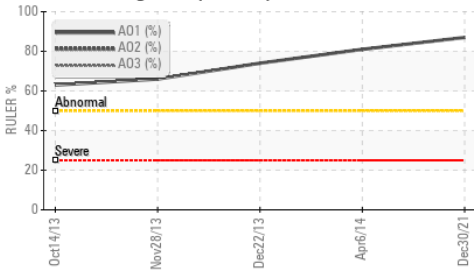
method	limit/base	current	history1	history2
Particles >4µm ASTM D7647		<b>715</b>	140	503
Particles >6µm ASTM D7647	>1300	<b>120</b>	35	124
Particles >14µm ASTM D7647	>160	<b>5</b>	5	8
Particles >21µm ASTM D7647	>40	<b>0</b>	2	2
Particles >38µm ASTM D7647	>10	<b>0</b>	0	0
Particles >71µm ASTM D7647	>3	<b>0</b>	0	0
Oil Cleanliness ISO 4406 (c)	>--/17/14	<b>17/14/10</b>	14/12/10	16/14/10



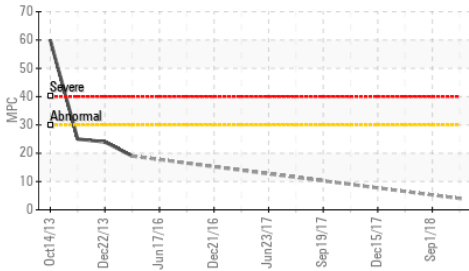
Hilcorp Alaska, LLC

# OIL ANALYSIS REPORT

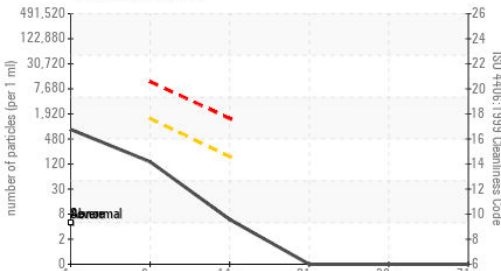
### Remaining Life (RULER)



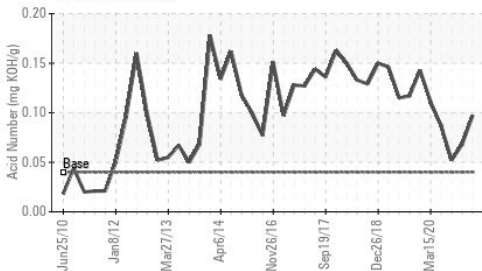
### Varnish Potential



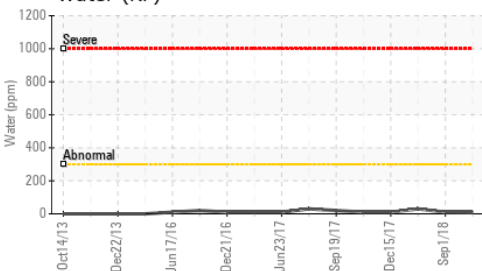
### Particle Count



### Acid Number



### Water (KF)



FLUID DEGRADATION	method	limit/base	current	history1	history2	
Acid Number (AN)	mg KOH/g	ASTM D8045	0.04	<b>0.097</b>	0.068	0.052
Anti-Oxidant 1	%	ASTM D6971	<25	<b>87</b>	---	---
Anti-Oxidant 2	%	ASTM D6971	<25	<b>36</b>	---	---
MPC Varnish Potential	Scale	ASTM D7843	>15	<b>4</b>	---	---

VISUAL	method	limit/base	current	history1	history2	
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.03	<b>NEG</b>	NEG	NEG
Free Water	scalar	*Visual		<b>NEG</b>	NEG	NEG

FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 40°C	cSt	ASTM D445	32.7	<b>32.3</b>	32.5	32.4

### SAMPLE IMAGES

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



Certificate L2367

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

Sample No. : HLC0001654

Lab Number : 05440138

Unique Number : 9804331

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)

HILCORP ALASKA LLC - ENDICOTT

604 WAREHOUSE ENDICOTT

PRUDHOE BAY, AK

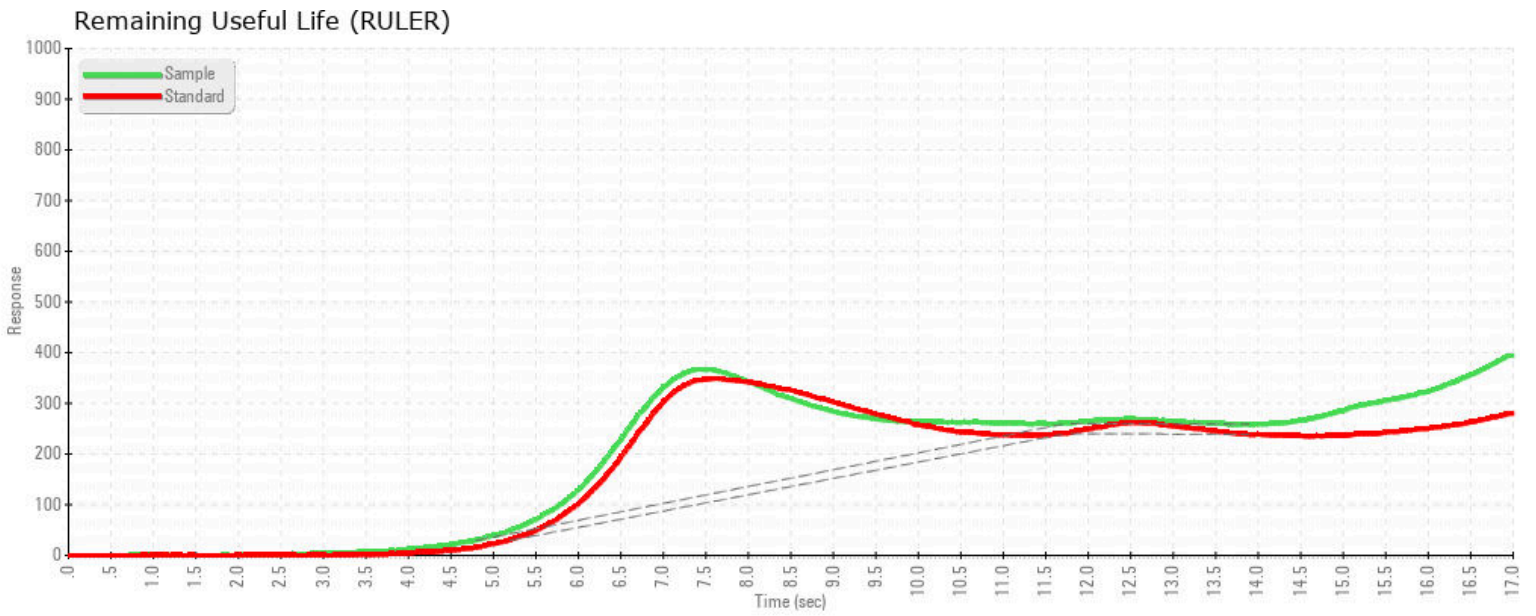
US 99734

Contact: SEAN LOWTHER

slowther@hilcorp.com

T: (907)659-6800

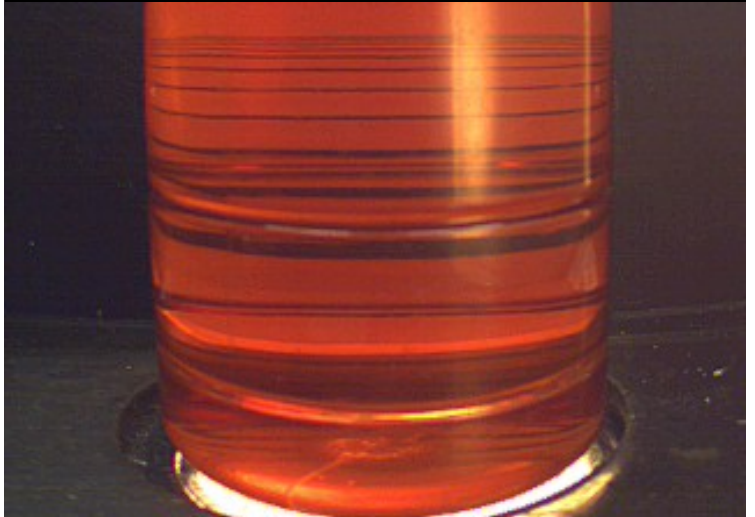
F:



MPC (Varnish Test)



Sample Color & Clarity



*This page left intentionally blank*