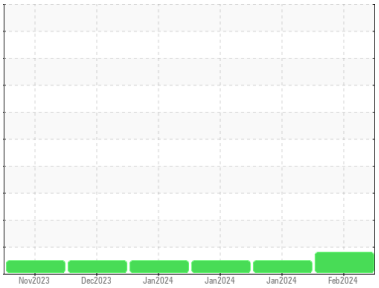
Hilcorp Alaska, LLC

OIL ANALYSIS REPORT

Sample Rating Trend



SOOT

Machine Id
ASRI-SKD-GNED-0001 ASRI-SKD-GNED-0001
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (9 GAL)

DIAGNOSIS

Recommendation
The oil change at the time of sampling has been noted. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear
All component wear rates are normal.

Contamination
Light concentration of carbon/soot present in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**HLC0002968**	HLC0002973	HLC0003157
Sample Date		Client Info		**25 Feb 2024**	24 Jan 2024	22 Jan 2024
Machine Age	hrs	Client Info		**5623**	5307	4536
Oil Age	hrs	Client Info		**350**	350	330
Oil Changed		Client Info		**Changed**	Changed	Changed
Sample Status				**ABNORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.2	**NEG**	NEG	NEG
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	**26**	28	35
Chromium	ppm	ASTM D5185m	>20	**1**	<1	<1
Nickel	ppm	ASTM D5185m	>4	**<1**	<1	<1
Titanium	ppm	ASTM D5185m		**<1**	<1	<1
Silver	ppm	ASTM D5185m	>3	**<1**	0	<1
Aluminum	ppm	ASTM D5185m	>20	**2**	1	2
Lead	ppm	ASTM D5185m	>40	**1**	1	4
Copper	ppm	ASTM D5185m	>330	**2**	1	3
Tin	ppm	ASTM D5185m	>15	**2**	<1	1
Vanadium	ppm	ASTM D5185m		**<1**	0	<1
Cadmium	ppm	ASTM D5185m		**<1**	0	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**61**	54	51
Barium	ppm	ASTM D5185m	10	**0**	0	0
Molybdenum	ppm	ASTM D5185m	100	**2**	2	1
Manganese	ppm	ASTM D5185m		**1**	<1	2
Magnesium	ppm	ASTM D5185m	450	**770**	784	840
Calcium	ppm	ASTM D5185m	3000	**1472**	1490	1461
Phosphorus	ppm	ASTM D5185m	1150	**817**	786	795
Zinc	ppm	ASTM D5185m	1350	**884**	900	929
Sulfur	ppm	ASTM D5185m	4250	**3512**	3582	3164

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	**7**	4	5
Sodium	ppm	ASTM D5185m	>158	**2**	4	4
Potassium	ppm	ASTM D5185m	>20	**4**	4	6
Fuel	%	ASTM D3524	>5	**<1.0**	<1.0	<1.0

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**3.2**	2.8	2.2
Nitration	Abs/cm	*ASTM D7624	>20	**10.9**	11.1	9.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	**24.6**	25.2	23.0

FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**15.1**	16.8	14.8
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**8.31**	8.56	7.87

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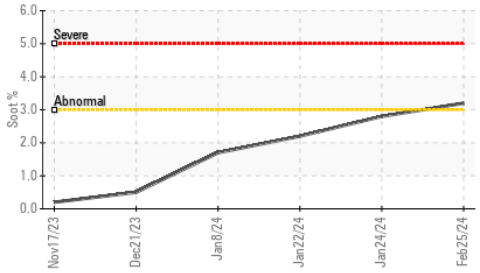
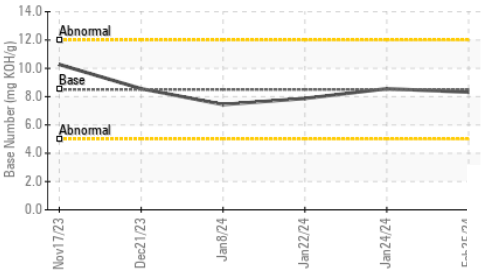
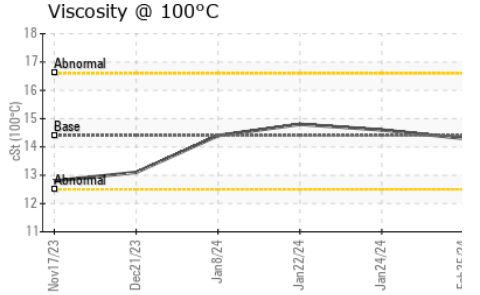
Soot %



Base Number



Viscosity @ 100°C

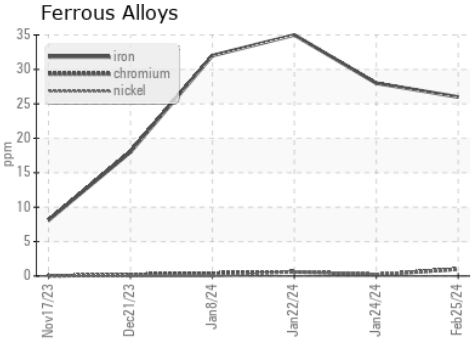


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

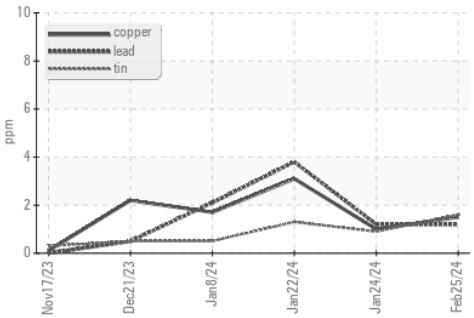
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	**14.3**	14.6	14.8

GRAPHS

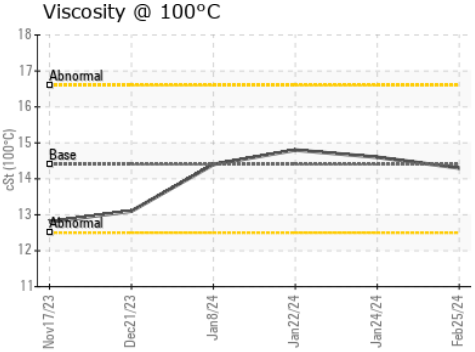
Ferrous Alloys



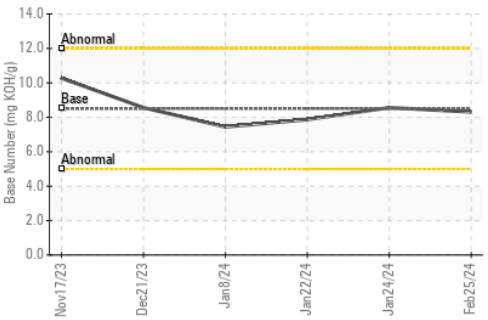
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : HLC0002968
Lab Number : 06135742
Unique Number : 10955207
Test Package : IND 2 (Additional Tests: FuelDilution)

Received : 02 Apr 2024
Tested : 03 Apr 2024
Diagnosed : 03 Apr 2024 - Wes Davis

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)

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