

OIL ANALYSIS REPORT

ASRI-SKD-GNED-0001 ASRI-SKD-GNED-0001

Diesel Engine

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

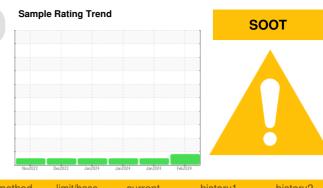
All component wear rates are normal.

Contamination

Light concentration of carbon/soot present in the oil.

Fluid Condition

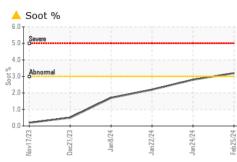
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

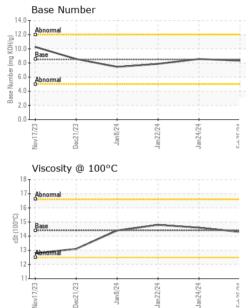


SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		HLC0002968	HLC0002973	HLC0003157
Sample Date		Client Info		25 Feb 2024	24 Jan 2024	22 Jan 2024
Machine Age	hrs	Client Info		5623	5307	4536
Oil Age	hrs	Client Info		350	350	330
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL
CONTAMINATIO	N	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			11			history O
ADDITIVES		method	limit/base	current	history1	history2
Boron	mqq	ASTM D5185m	250	61	history1 54	51
	ppm ppm	ASTM D5185m		61		51
Boron Barium	ppm		250		54	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	250 10	61 0	54 0	51 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	61 0 2	54 0 2	51 0 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	61 0 2 1	54 0 2 <1	51 0 1 2
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	61 0 2 1 770	54 0 2 <1 784	51 0 1 2 840
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	61 0 2 1 770 1472	54 0 2 <1 784 1490	51 0 1 2 840 1461
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	61 0 2 1 770 1472 817	54 0 2 <1 784 1490 786	51 0 1 2 840 1461 795
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	61 0 2 1 770 1472 817 884	54 0 2 <1 784 1490 786 900	51 0 1 2 840 1461 795 929
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	61 0 2 1 770 1472 817 884 3512	54 0 2 <1 784 1490 786 900 3582	51 0 1 2 840 1461 795 929 3164
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	61 0 2 1 770 1472 817 884 3512 current	54 0 2 <1 784 1490 786 900 3582 history1	51 0 1 2 840 1461 795 929 3164 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	250 10 100 450 3000 1150 1350 4250 limit/base >25	61 0 2 1 770 1472 817 884 3512 current 7	54 0 2 <1 784 1490 786 900 3582 history1 4	51 0 1 2 840 1461 795 929 3164 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20	61 0 2 1 770 1472 817 884 3512 current 7 2	54 0 2 <1 784 1490 786 900 3582 history1 4 4	51 0 1 2 840 1461 795 929 3164 history2 5 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20	61 0 2 1 770 1472 817 884 3512 current 7 2 4	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4	51 0 1 2 840 1461 795 929 3164 history2 5 4 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 kimit/base >25 >158 >20 >5	61 0 2 1 770 1472 817 884 3512 current 7 2 4 4 <1.0 current	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 4 4 5 1.0	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 6 <1.0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 I imit/base >25 >158 >20 >5	61 0 2 1 770 1472 817 884 3512 <i>current</i> 7 2 4 4 <1.0 <i>current</i>	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 4 <1.0 history1	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 <1.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 >5 limit/base >3	61 0 2 1 770 1472 817 884 3512 current 7 2 4 4 <1.0 current	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 4 4 <1.0 history1 2.8	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 <1.0 history2 2.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844	250 10 100 450 3000 1150 1350 4250 bimit/base >25 >158 >20 bimit/base >3 >20	61 0 2 1 770 1472 817 884 3512 current 7 2 4 <1.0 current 3.2 10.9	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 <1.0 history1 2.8 11.1	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 <1.0 history2 2.2 9.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 >5 Iimit/base >3 >20 >30 30	61 0 2 1 770 1472 817 884 3512 current 7 2 4 <1.0 current 3.2 10.9 24.6 current	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 4 <1.0 history1 2.8 11.1 25.2 history1	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 <1.0 history2 2.2 9.8 23.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D51854 *ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >158 >20 >5 Iimit/base >3 >20 >3 >20	61 0 2 1 770 1472 817 884 3512 <i>current</i> 7 2 4 <1.0 <i>current</i> ▲ 3.2 10.9 24.6	54 0 2 <1 784 1490 786 900 3582 history1 4 4 4 4 <1.0 history1 2.8 11.1 25.2	51 0 1 2 840 1461 795 929 3164 history2 5 4 6 <1.0 history2 2.2 9.8 23.0



OIL ANALYSIS REPORT





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 PROPER	TIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.3	14.6	14.8
GRAPHS						
Ferrous Alloys						
iron	are and a second se					
- aaaaaaaaaa chromium						
5 - nickel						
5						
•						
5		·				
	24		44- 			
Nov17/23 Dec21/23	Jan 0/24	Jan 24/24	Feb 25/24			
Non-ferrous Meta	,	7	LL.			
8 - copper						
tin						
6 -		1				
4-	APPENDENT TO A					
2	-					
and the second sec	and the state of the					
53 53	24	24	24			
Nov17/23 Dec21/23	Jano/24 an22/24	Jan 24/24	eb25/24			
≥	7	ЪЪ	L۳.			
				Base Number		
			14.0			
8			14.0	Abnormal		
7 Abnormal			12.0	Abnormal		
Abnormal			12.0			
8				Abnormal		

umber 6.0 Base Nu

Feb25/24.

: 02 Apr 2024

: 03 Apr 2024

Jan24/24 -

Jan22/24

Received

Tested

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

4 (

2.0

0.0

Nov17/23

Dec21/23 -

Jan 8/24

Jan 22/24

HILCORP EXPLORATION ALASKA - MILNE POINT



Unique Number : 10955207 Diagnosed : 03 Apr 2024 - Wes Davis Test Package : IND 2 (Additional Tests: FuelDilution) Certificate L2367 evan.reilly@hilcorp.com 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)

Jan8/24

13

12

11-

Lab Number : 06135742

Laboratory Sample No. Nov17/23

: HLC0002968

Dec21/23

Contact/Location: Evan Reilly - BPEMPU

US 99734

F: x:

Jan24/24 -

1000 MILNE POINT RD

PRUDOE BAY, AK

Contact: Evan Reilly

T: (907)670-3231

Feb25/24