

OIL ANALYSIS REPORT





Sep2016 Feb2017 Mar2018 Aug2018 Mar2019 Jul2022 Dec2

Sample Rating Trend

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0122053	LW0006419	LW0005012
Sample Date		Client Info		29 Mar 2024	22 Dec 2022	07 Jul 2022
Machine Age	hrs	Client Info		3350	3118	2947
Oil Age	hrs	Client Info		232	171	313
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	3	4	7
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>25	<1	<1	<1
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		0	<1	0
	pp					0
Cadmium	ppm	ASTM D5185m		0	0	0
Cadmium ADDITIVES			limit/base			
		ASTM D5185m	limit/base	0 current 6	0 history1 11	0 history2 11
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
ADDITIVES Boron Barium Molybdenum	ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54	0 history1 11 0 54	0 history2 11 0 61
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1	0 history1 11 0	0 history2 11 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906	0 history1 11 0 54 <1 827	0 history2 11 0 61 <1 940
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168	0 history1 11 0 54 <1 827 1267	0 history2 11 0 61 <1 940 1199
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069	0 history1 11 0 54 <1 827 1267 1037	0 history2 11 0 61 <1 940 1199 1094
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263	0 history1 11 0 54 <1 827 1267 1037 1226	0 history2 11 0 61 <1 940 1199 1094 1256
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069	0 history1 11 0 54 <1 827 1267 1037	0 history2 11 0 61 <1 940 1199 1094
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263	0 history1 11 0 54 <1 827 1267 1037 1226	0 history2 11 0 61 <1 940 1199 1094 1256
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263 3579 	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263 3579 current 2	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1 4	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263 3579 	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263 3579 current 2	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1 4	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base	0 current 6 0 54 <1 906 1168 1069 1263 3579 current 2 2 2	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1 4 <	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2 2 2 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	0 current 6 0 54 <1 906 1168 1069 1263 3579 current 2 2 0	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1 4 <1 <1	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2 2 2 2 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	0 current 6 0 54 <1 906 1168 1069 1263 3579 current 2 2 0 Current	0 history1 11 0 54 <1 827 1267 1037 1226 3488 history1 4 <1 <1 <1 history1	0 history2 11 0 61 <1 940 1199 1094 1256 4002 history2 2 2 2 0 0 history2

Diesel Engine Fluid LEAHY WOLF PREMIUM 15W40 (4 hrs)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

4522

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

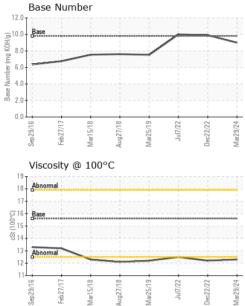
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



OIL ANALYSIS REPORT

FLUID DEGRADATION method limit/base



	Oxidation Base Number (BN)	Abs/.1mm mg KOH/g	*ASTM D7414 ASTM D2896	9.8	16.2 9.0	15.5 9.9	17.8 10.0
	VISUAL		method	limit/base	current	history1	history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Aug27/18 Mar25/19 Juf7/22 Dec22/22 Mar29/24	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Aug Dec	Silt Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar scalar	*Visual *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 PROPE	RTIES	method	limit/base	current	history1	history2
/19 /19 /19 /22 /22 /24	Visc @ 100°C	cSt	ASTM D445	15.6	12.3	12.2	12.5
Aug27/18 Mar25/19 Jul7/22 Dec22/22 Mar29/24	GRAPHS						
	Iron (ppm)				Lead (ppm)		
	250 Severe			100	Courses .		
	200 - 4			80 = 60	,		
	E 100 Abnormal			E 4(Abnormal		
	50			20			
		Aug <i>z I/</i> 10 - Mar25/19 -	Jul7/22 - Dec22/22 -	Mar29/24 -	Sep29/16 Feb27/17	Aug27/18 - Mar25/19 -	Jul7/22 - Dec22/22 - Mar29/24 -
	Sep2 Feb2 Mar1	Aug.c Mar2	Jul Dec2	Mar2	Sep2 Feb2 Mar1	Aug2 Mar2	Jul7/22 Dec22/22 Mar29/24
	Aluminum (ppm)				Chromium (pp	m)	
	50 40 Severe			50	Courses .		
	E 30 Abnormal			E ³⁰			
					1 I I I I I I I I I I I I I I I I I I I		
				10			
	Sep 29/16 Feb 27/17 Mar15/18	Aug <i>z 1/</i> 1 0 Mar25/19	Jul7/22 Dec22/22	Mar29/24	Sep29/16 Feb27/17 Mar15/18	Aug27/18	Jul7/22 Dec22/22 Mar29/24
		Mai	Dec	Mai		Aug	Dec 1
	Copper (ppm)				Silicon (ppm)		
	300 Stysemal			60	ų		
	통 200			<u>a</u> 40)-		
	100-			20	Abhormai		
		6	2			0 5	2
	Sep29/16 Feb27/17 Mar15/18	Mar25/19	Jul7/22 Dec22/22	Mar29/24	Sep 29/16 Feb 27/17 Mar 15/18	Aug27/18 Mar25/19	Jul7/22 Dec22/22 Mar29/24
	ة ⊻ ∑ Viscosity @ 100°C		ă	Z	∞	Au M	ă M
	20 T -						
	18 Abnormal			(B)15.((B)15.(B)10.(B)10.(B)10.(C)10.(Base		
	0016 Base 14 Abnormal			uper (r			
	12 Abnormal			- N S.U	J		
		19	22	0.0 Bas	18 11 18	18	22+
	Sep29/16 Feb27/17 Mar15/18	Mar25/19	Jul7/22	Mar29/24	Sep29/16 Feb27/17 Mar15/18	Aug27/18 Mar25/19	Jul7/22 Dec22/22 Mar29/24
Sample No. Lab Number Unique Number	: 10956560 : MOB 1 (Additional Te <i>contact Customer Servi</i>	ved : 03 d : 03 losed : 03) 00-237-1369	K5 CONSTRUCTION CORPORATION 6301 S EAST AVENUE HODGKINS, IL es Davis US 60525 Contact: Dave Gorsk daveg@k-five.ne T: (630)257-5600				
	ecifications are based o				rule (JCGM 106.	2012) 	F:

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Submitted By: NOELLE TERRAULT Page 2 of 2