

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine

Fluid PETRO CANADA DURON SHP 10W30 (--- QTS)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

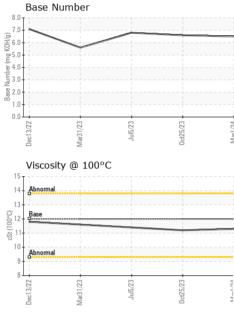
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		Dec2022		Jul2023 Oct2023	Mar2024	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0111592	PCA0101813	PCA0095267
Sample Date		Client Info		01 Mar 2024	25 Oct 2023	05 Jul 2023
Machine Age	mls	Client Info		25000	25000	25000
Oil Age	mls	Client Info		25000	25000	25000
Oil Changed		Client Info		N/A	N/A	N/A
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	>110	14	14	16
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum	ppm	ASTM D5185m	>25	8	6	12
Lead	ppm	ASTM D5185m	>45	0	<1	0
Copper	ppm	ASTM D5185m	>85	1	3	5
Tin	ppm	ASTM D5185m	>4	<1	0	<1
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	2	2	7	3
Barium		ASTM D5185m	0	0	6	<1
Banann	ppm	7101111 20100111	0	v	0	
Molybdenum	ppm ppm	ASTM D5185m	50	66	65	70
				-		70 <1
Molybdenum Manganese	ppm	ASTM D5185m	50	66	65	
Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m	50 0	66 <1	65 <1	<1
Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950	66 <1 928	65 <1 839	<1 1013
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050	66 <1 928 1082	65 <1 839 1107	<1 1013 1253
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995	66 <1 928 1082 1028	65 <1 839 1107 996	<1 1013 1253 1099
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180	66 <1 928 1082 1028 1255	65 <1 839 1107 996 1168	<1 1013 1253 1099 1370
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600	66 <1 928 1082 1028 1255 2953	65 <1 839 1107 996 1168 3474	<1 1013 1253 1099 1370 3815
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 Limit/base	66 <1 928 1082 1028 1255 2953 current	65 <1 839 1107 996 1168 3474 history1	<1 1013 1253 1099 1370 3815 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	50 0 950 1050 995 1180 2600 Limit/base >30	66 <1 928 1082 1028 1255 2953 current 5	65 <1 839 1107 996 1168 3474 history1 6	<1 1013 1253 1099 1370 3815 history2 4
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 Limit/base >30	66 <1 928 1082 1028 1255 2953 current 5 <1	65 <1 839 1107 996 1168 3474 history1 6 0	<1 1013 1253 1099 1370 3815 history2 4 2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 limit/base >30	66 <1 928 1082 1028 1255 2953 current 5 <1 12	65 <1 839 1107 996 1168 3474 history1 6 0 16	<1 1013 1253 1099 1370 3815 history2 4 2 22
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 limit/base >20 limit/base >3	66 <1 928 1082 1028 1255 2953 current 5 <1 12 20 current	65 <1 839 1107 996 1168 3474 history1 6 0 16 history1	<1 1013 1253 1099 1370 3815 history2 4 2 22 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 limit/base >20 limit/base >3	66 <1 928 1082 1028 1255 2953 current 5 <1 12 22 5 <1 12 20 5 <1 12	65 <1 839 1107 996 1168 3474 history1 6 0 16 history1 0.4	<1 1013 1253 1099 1370 3815 history2 4 2 22 history2 0.4
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 limit/base >30 >20 limit/base >3	66 <1 928 1082 1028 1255 2953 current 5 <1 12 current 0.4 9.8 20.4	65 <1 839 1107 996 1168 3474 history1 6 0 16 history1 0.4 9.9	<1 1013 1253 1099 1370 3815 history2 4 2 22 history2 0.4 10.3
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	50 0 950 1050 995 1180 2600 limit/base >30 >20 limit/base >3 >20 >30	66 <1 928 1082 1028 1255 2953 current 5 <1 12 current 0.4 9.8 20.4	65 <1 839 1107 996 1168 3474 history1 6 0 16 history1 0.4 9.9 21.6	<1 1013 1253 1099 1370 3815 history2 4 2 22 history2 0.4 10.3 20.6
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm TS 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 *ASTM D7844 *ASTM D7624 *ASTM D7415	50 0 950 1050 995 1180 2600 imit/base >30 20 imit/base >3 >20 30 30 imit/base	66 <1 928 1082 1028 1255 2953 current 5 <1 12 current 0.4 9.8 20.4 current	65 <1 839 1107 996 1168 3474 history1 6 0 16 history1 0.4 9.9 21.6 history1	<1 1013 1253 1099 1370 3815 history2 4 2 22 history2 0.4 10.3 20.6 history2



OIL ANALYSIS REPORT

VISUAL



		VISUAL		method	limit/base	current	nistory i	nistory2
		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE	
1		Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Jul5/23 +	Debris	scalar	*Visual	NONE	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
յու	0ct25/23 Mar1/24	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	- 0.6	NEG	NEG	NEG
		FLUID PROPI		method	limit/base			history2
		Visc @ 100°C	cSt	ASTM D445		current 11.3	history1 11.2	nistory∠ 11.4
		GRAPHS	001	No fill B filo	12.00	1110		
		Ferrous Alloys						
		45 T						
Jul5/23	0ct25/23 ********	40 - iron chromium						
Ju	Octi	35						
				1				
		E 25						
		15-	-					
		10-						
		5						
		/23	/23 -	/23	/24			
		Dec13/22 Mar31/23	Jul5/23	0ct25/23	Mar1/24			
		Non-ferrous Meta	als					
	16 - copper							
	14 tin							
		12						
				1				
		6-						
		4-						
		2-			-			
		2 Z	23	53	24			
			Jul5/23	0ct25/23	Mar1/24			
		ec13/	~	5	2			
		000 Mar31/23		00	2			
		Viscosity @ 100°		0		Base Number		
		Viscosity @ 100°		0	8.0	T		
		Viscosity @ 100°		20 	8.0			
		Viscosity @ 100°		00	8.0			
		Viscosity @ 100°		0	8.0			
		Viscosity @ 100°		00	8.0			
		Viscosity @ 100°		0	8.0			
		Viscosity @ 100°		20	8.0			
		Viscosity @ 100°	c		8.0 7.0 (9)(HOX DBU) +4(0, -1) +4(0, -1)) +4(0, -1))) +4(0, -1)) +4(0, -1))) +4(0, -1))) +4(0, -1))) +4(0, -1))) +4(0, -1			
		Viscosity @ 100°	c		8.0 7.0 (9)(HOX DBU) +4(0, -1) +4(0, -1)) +4(0, -1))) +4(0, -1)) +4(0, -1))) +4(0, -1))) +4(0, -1))) +4(0, -1))) +4(0, -1		Jul5/23	25.73
		Viscosity @ 100°		0ct25/23 0c	8.0 7.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Julisi23	Oct25/23 +
	Laboratory	Viscosity @ 100° ¹⁵ ¹⁴ ¹³ ¹³ ¹⁴ ¹³ ¹⁵ ¹⁴ ¹⁵ ¹⁴ ¹³ ¹⁵ ¹⁴ ¹⁵ ¹⁵ ¹⁴ ¹⁵ ¹⁵ ¹⁵ ¹⁴ ¹⁵ ¹⁵ ¹⁵ ¹⁵ ¹⁶ ¹⁵ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁷ ¹⁸ ¹⁷ ¹⁷ ¹⁸ ¹⁸ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁹ ¹⁰	C	0et25/23 -	8.0 7.0 (0)HOX bul) 14.0 100 bul) 14.0 900 area 2.0 1.0 0.0	Dec13/22		
	Laboratory Samole No.	Viscosity @ 100° ¹⁵ ¹⁴ ¹⁵ ¹⁶ ¹⁵ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶	C EZggn 01 Madiso	EZISTRO MI Ave., Cary	8.0 7.0 (9)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)	Dec13/22 Mar31/23	TE & CO - BEAU	FORT DIVISIO
VAB	Sample No.	Viscosity @ 100° ¹⁵ ¹⁴ ¹⁵ ¹⁶ ¹⁵ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁵ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁷ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁶ ¹⁰ ¹⁶	C	m Ave., Cary ived : 06	8.0 7.0 (0)HOX bul) 14.0 100 bul) 14.0 900 area 2.0 1.0 0.0	Dec13/22 Mar31/23	TE & CO - BEAU 1491 YENMASS	FORT DIVISIO
	Sample No. Lab Numbe Unique Numbe	Viscosity @ 100° Viscosity @ 100° 15 14 200 10 200 200 200 200 200 200	C EXIMP 01 Madiso Recei	m Ave., Cary ived : 06	8.0 7.0 (9H0) 50.0 9UII 4.0 9UII 4.0 9U	Dec13/22 Mar31/23	TE & CO - BEAU 1491 YENMASS V	IFORT DIVISIO SEE HIGHWA ARNVILLE, S US 299
	Sample No. Lab Numbe Unique Numbe Test Packag	Viscosity @ 100° Viscosity @ 100° 15 14 200 10 200 200 200 200 200 200	C EXIGN 01 Madiso Recei Teste Diagn	on Ave., Cary ived : 06 id : 07	8.0 7.0 60,000 90,00000 90,0000 90,0000 90,0000 90,0000 90,0000 90,00000000	CZCE1302 CZCE1302 NWWHI Yes Davis	TE & CO - BEAU 1491 YENMASS V	ifort division See Highwa Arnville, S US 2994 : David Wee