

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine Fluid

PETRO CANADA DURON SHP 10W30 (10 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

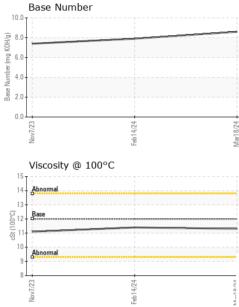
Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0117755	PCA0110799	PCA0105218
Sample Date		Client Info		18 Mar 2024	14 Feb 2024	07 Nov 2023
Machine Age	mls	Client Info		235242	217034	201893
Oil Age	mls	Client Info		18208	15141	18202
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	8	14	17
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	3	2
Lead	ppm	ASTM D5185m	>40	<1	0	<1
Copper	ppm	ASTM D5185m	>330	1	2	3
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		•	0	0
oddinidini	ppm	ASTIM DSTOSIII		0	0	0
ADDITIVES	ppm	method	limit/base	-	history1	history2
	ppm		limit/base	-	-	history2 2
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	2 0 50	current 2	history1 3 0 56	history2 2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	2 0 50 0	current 2 0	history1 3 0	history2 2 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	current 2 0 63 0 1010	history1 3 0 56 <1 911	history2 2 0 57 <1 951
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	Current 2 0 63 0 1010 1205	history1 3 0 56 <1 911 1044	history2 2 0 57 <1 951 1056
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	Current 2 0 63 0 1010 1205 1152	history1 3 0 56 <1 911 1044 992	history2 2 0 57 <1 951 1056 998
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180	Current 2 0 63 0 1010 1205 1152 1320	history1 3 0 56 <1 911 1044 992 1207	history2 2 0 57 <1 951 1056 998 1255
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current 2 0 63 0 1010 1205 1152	history1 3 0 56 <1 911 1044 992	history2 2 0 57 <1 951 1056 998 1255 2742
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current 2 0 63 0 1010 1205 1152 1320	history1 3 0 56 <1 911 1044 992 1207	history2 2 0 57 <1 951 1056 998 1255
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	2 0 50 950 1050 995 1180 2600	current 2 0 63 0 1010 1205 1152 1320 3973 current 3	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	2 0 50 950 1050 995 1180 2600	current 2 0 63 0 1010 1205 1152 1320 3973 current 3	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	2 0 50 950 1050 995 1180 2600 limit/base >25	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2 0 current 3 2 0 current 0.2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4 2 history1 0.3	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4 2 history2 0.4
ADDITIVES Boron Barium 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	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 -20 limit/base	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2 0 current 0 current 0.2 6.2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4 2 history1 0.3 7.6	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4 2 history2 0.4 8.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 limit/base >25 >20 limit/base >20	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2 0 current 3 2 0 current 0.2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4 2 history1 0.3	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4 2 history2 0.4
ADDITIVES Boron Barium 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	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	2 0 50 950 1050 995 1180 2600 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2 0 current 0 current 0.2 6.2	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4 2 history1 0.3 7.6	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4 2 history2 0.4 8.2
ADDITIVES Boron Barium 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	method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	2 0 50 0 950 1050 995 1180 2600 imit/base >25 20 imit/base >4 >20 >30	current 2 0 63 0 1010 1205 1152 1320 3973 current 3 2 0 current 0 current 0.2 6.2 18.3	history1 3 0 56 <1 911 1044 992 1207 2768 history1 5 4 2 history1 0.3 7.6 18.9	history2 2 0 57 <1 951 1056 998 1255 2742 history2 6 4 2 history2 0.4 8.2 19.6



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
1	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
3/24 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Mar18/24	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
	Visc @ 100°C	cSt	ASTM D445	12.00	11.3	11.4	11.1
	GRAPHS						
	Ferrous Alloys						
5	18 16						
C 01	14 - normanic chromium						
1 U U	12						
	E ¹⁰						
	8						
	6						
	4						
	2						
	7/23	4/24 -		8/24			
	Nov7/23	Feb14/24		Mar18/24			
	Non-ferrous Meta			-			
	¹⁰ T						
	copper						
	8 - management tin						
	6.						
	u dd						
	- A						
	4						
	2						
	2						
		(24		3/24			
	2 0 E2/L/volv	Feb14/24		Mart 8/24			
	Viscosity @ 100°C	Feb14/24		Mar18/24	Base Num	her	
	Viscosity @ 100°C			2 9.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			2 9.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0- 8.0-	Base Num	ber	
	Viscosity @ 100°C			≥ 9.0 8.0 (a) 7.0 HOX 6.0 b) 5.0 b) 4.0 vagut, 4.0 vag			
	Viscosity @ 100°C			≥ 9.0 8.0 (a) 7.0 HOX 6.0 b) 5.0 b) 4.0 vagut, 4.0 vag			
	Viscosity @ 100°C			≥ 9.0 8.0 (6,7.0 HOX 6.0- Lu 5.0- 19 4.0- 988 2.0- 1.0- 1.0-	Base Num	ber Hap1424	
	Viscosity @ 100°C	Feb14/24		≥ 9.0 8.0 (07.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		Feb14/24	
Laboratory	Viscosity @ 100°C	C b b b b b c b c b c b c b c b c b c b		9.0 8.0 9.0 107.0 9.0 107.0 9.0 10.0 9.0 10.0 9.0 10.0 10.0 10.0		Feb 14/24	
Sample No.	Viscosity @ 100°0	01 Madisco Recei	ived : 19	9.0 8.0 9.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9		BLUE M. 1015 E. WESTING	HOUSE BLV
Sample No. Lab Number	Viscosity @ 100°0 Viscosity @ 100°0 15 14 0 10 10 10 10 10 10 10 10 10	01 Madiso Recei Teste	ived : 19 ed : 20	9.0 8.0 9.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Nev7/23	BLUE M. 1015 E. WESTING	HOUSE BLV ARLOTTE, N
Sample No. Lab Number Unique Number	Viscosity @ 100°0 Viscosity @ 100°0	01 Madiso Recei Teste	ived : 19 ed : 20	9.0 8.0 9.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Nev7/23	BLUE M. 1015 E. WESTING CH	HOUSE BLV IARLOTTE, N US 282
Sample No. Lab Number Unique Number Test Package	Viscosity @ 100°0 Viscosity @ 100°0	D1 Madiso Rece Teste Diagr	ived : 19 ed : 20 nosed : 20	9.0 8.0 9.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Nev7/23	BLUE M. 1015 E. WESTING CH	HOUSE BLV ARLOTTE, N US 282 act: Jody Gre