

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid PETRO CANADA DURON SHP 10W30 (--- 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.

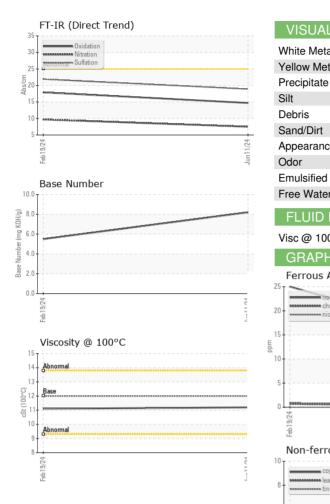
#### Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0108007	PCA0110737	
Sample Date		Client Info		11 Jun 2024	19 Feb 2024	
Machine Age	hrs	Client Info		5700	5202	
Oil Age	hrs	Client Info		498	1137	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	
Water		WC Method	>0.2	NEG	NEG	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	13	25	
Chromium	ppm		>20	<1	<1	
Nickel	ppm	ASTM D5185m	>5	<1	<1	
Titanium	ppm	ASTM D5185m		0	0	
Silver	ppm	ASTM D5185m	>2	0	0	
Aluminum	ppm		>20	2	4	
Lead	ppm	ASTM D5185m	>40	- <1	<1	
Copper	ppm		>330	2	4	
Tin	ppm	ASTM D5185m	>15	- <1	<1	
Vanadium	ppm	ASTM D5185m		0	<1	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES						
ADDITIVES		method				history2
	maa					history2
Boron Barium	ppm mag	ASTM D5185m	limit/base 2 0	current 0 0	history1 <1 0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	2 0	0 0	<1 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m	2	0	<1	
Boron Barium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	0 0 62	<1 0 63	
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	0 0 62 <1	<1 0 63 <1	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	0 0 62 <1 956	<1 0 63 <1 992	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	0 0 62 <1 956 1145	<1 0 63 <1 992 1161	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	0 0 62 <1 956 1145 1111	<1 0 63 <1 992 1161 1036	
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	2 0 50 0 950 1050 995 1180	0 0 62 <1 956 1145 1111 1325	<1 0 63 <1 992 1161 1036 1227	
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	2 0 50 0 950 1050 995 1180 2600	0 0 62 <1 956 1145 1111 1325 3667	<1 0 63 <1 992 1161 1036 1227 3134	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	0 0 62 <1 956 1145 1111 1325 3667 current	<1 0 63 <1 992 1161 1036 1227 3134 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm 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	2 0 50 950 1050 995 1180 2600	0 0 62 <1 956 1145 1111 1325 3667 current 4	<1 0 63 <1 992 1161 1036 1227 3134 history1 5	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm 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	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25	0 0 62 <1 956 1145 1111 1325 3667 current 4 5	<1 0 63 <1 992 1161 1036 1227 3134 history1 5 7	      history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20	0 0 62 <1 956 1145 1111 1325 3667 current 4 5 1	<1 0 63 <1 992 1161 1036 1227 3134 <b>history1</b> 5 7 5	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 -20 <b>imit/base</b>	0 0 62 <1 956 1145 1111 1325 3667 current 4 5 1 2	<1 0 63 <1 992 1161 1036 1227 3134 history1 5 7 5 5 history1	     history2    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >4	0 0 62 <1 956 1145 1111 1325 3667 <i>current</i> 4 5 1 <i>current</i> 0.3	<1 0 63 <1 992 1161 1036 1227 3134 <b>history1</b> 5 7 5 <b>5</b> 7 5 <b>history1</b> 0.7	     history2   history2
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	ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600 imit/base >25 >20 imit/base >20	0 0 62 <1 956 1145 1111 1325 3667 <i>current</i> 4 5 1 <i>current</i> 0.3 7.5	<1 0 63 <1 992 1161 1036 1227 3134 <b>history1</b> 5 7 5 7 5 <b>history1</b> 0.7 9.7	     history2   history2  history2
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	ASTM D5185m ASTM D5185m	2 0 50 50 950 1050 995 1180 2600 <b>imit/base</b> >25 20 <b>imit/base</b> >20 30	0 0 62 <1 956 1145 1111 1325 3667 <i>current</i> 4 5 1 1 <i>current</i> 0.3 7.5 18.9	<1 0 63 <1 992 1161 1036 1227 3134 history1 5 7 5 history1 0.7 9.7 21.9	     history2  history2  history2  history2
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	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	2 0 0 50 0 950 1050 995 1180 2600 2600 25 20 220 20 20 20 20 20 20 20 20 20 20 20	0 0 62 <1 956 1145 1111 1325 3667 <i>current</i> 4 5 1 <i>current</i> 0.3 7.5 18.9	<1 0 63 <1 992 1161 1036 1227 3134 history1 5 7 5 history1 0.7 9.7 21.9 history1	      history2  history2  history2  history2



# **OIL ANALYSIS REPORT**



	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
***************************************	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
/24	Appearance	scalar	*Visual	NORML	NORML	NORML	
Jun 11/24	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual	20.L	NEG	NEG	
	FLUID PROPE	DTIES	method	limit/base		history1	history2
					current		
	Visc @ 100°C	cSt	ASTM D445	12.00	11.2	11.1	
	GRAPHS						
	Ferrous Alloys						
9	25						
(C) 1 1 / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / T - C / C / C / T - C / C / C / T - C / C / C / T - C / C / C / C / C / C / C / C / C / C	20 - nickel						
1							
	15						
	B 10						
	5-						
	0/24			/24			
	Feb 19/24			Jun 11/24			
	Non-ferrous Meta	ls		,			
101	<sup>10</sup> T						
	copper						
	8 -						
	6-						
	шdd						
	4						
	2						
	0						
				/24			
	b19/24			=			
	Feb 1	_		Jun11/			
	ਤੋਂ Viscosity @ 100°0	2		Jun11	Base Number		
	Uiscosity @ 100°C	2		9.0	Τ;	-	
	Uiscosity @ 100°C   15   14   Abnormal	2		9.0 8.0	T		
	Viscosity @ 100°C	2		9.0 8.0	T		
	Viscosity @ 100°C	2		9.0 8.0	T		
	Viscosity @ 100°C	2		9.0 8.0	T		
	Uiscosity @ 100°C   15   14   Abnormal	2		9.0 8.0	T		
	Viscosity @ 100°C	2		9.0	T		
	Viscosity @ 100°C	2		9.0 8.0 (9)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)			
	Viscosity @ 100°C	2		11 unn 9.0 8.0 (b)HOX 6.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9			
	Viscosity @ 100°C	2		11 unn 9.0 8.0 (b)HOX 6.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9			
	Viscosity @ 100°C	2		9.0 8.0 (9)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)			
	E Viscosity @ 100°C			9.0 8.0 (0)H(0)X 60.0 9.0 9.0 (0)H(0)X 60.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0			
Laboratory	Viscosity @ 100°C	1 Madiso		9.0 8.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 9.0 9.0 9.0 (0)H(0)X 6.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	Feb19/24	BLUE MA	
Sample No.	WearCheck USA - 50 : PCA0108007	1 Madiso Recei	i <b>ved</b> : 15	9.0 8.0 (0)HOX 60.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0	Feb19/24	BLUE MA 15 E. WESTINGI	
Sample No. Lab Number	Viscosity @ 100°C	1 Madiso Recei Teste	ived : 15 d : 17	9.0 8.0 (0)HOX bull 9.0 (0)HOX	Length 10	BLUE MA 15 E. WESTINGI	HOUSE BLV ARLOTTE, N
Sample No.	Viscosity @ 100°C	1 Madiso Recei	ived : 15 d : 17	9.0 8.0 (0)HOX 60.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0	Length 10	BLUE MA 15 E. WESTINGI CH	HOUSE BLV

\* - 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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