

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL

Machine Id 426021-4673

Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- LTR)

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

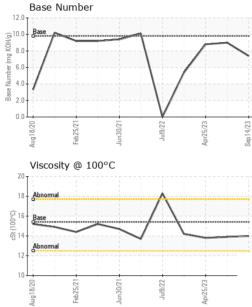
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086603	GFL0074371	GFL0074407
Sample Date		Client Info		14 Sep 2023	05 Jun 2023	25 Apr 2023
Machine Age	hrs	Client Info		43159	42830	42615
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	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
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	25	10	12
Chromium	ppm	ASTM D5185m	>20	1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	<1	<1
Lead	ppm	ASTM D5185m	>40	1	0	0
Copper	ppm	ASTM D5185m	>330	3	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	Method ASTM D5185m	limit/base	current 2	history1 3	history2 <1
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	3	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	3	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 61	3 0 59	<1 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 61 <1	3 0 59 <1	<1 0 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 61 <1 912	3 0 59 <1 952	<1 0 59 <1 934
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 61 <1 912 1073	3 0 59 <1 952 1052	<1 0 59 <1 934 1034
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	0 0 60 0 1010 1070 1150	2 0 61 <1 912 1073 999	3 0 59 <1 952 1052 983	<1 0 59 <1 934 1034 997
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	0 0 60 0 1010 1070 1150 1270	2 0 61 <1 912 1073 999 1198	3 0 59 <1 952 1052 983 1209	<1 0 59 <1 934 1034 997 1237
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 61 <1 912 1073 999 1198 3164	3 0 59 <1 952 1052 983 1209 3556	<1 0 59 <1 934 1034 997 1237 3316
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 61 <1 912 1073 999 1198 3164 current	3 0 59 <1 952 1052 983 1209 3556 history1	<1 0 59 <1 934 1034 997 1237 3316 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 61 <1 912 1073 999 1198 3164 current 4	3 0 59 <1 952 1052 983 1209 3556 history1 2	<1 0 59 <1 934 1034 997 1237 3316 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2	3 0 59 <1 952 1052 983 1209 3556 history1 2 2 <1 0	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2 <i>current</i>	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1 0	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1 0 0 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2 <i>current</i> 3.6	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1 0 history1 1.9	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1 0 <i>history2</i> 1.9
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	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2 <i>current</i> 3.6 10.4	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1 0 history1 1.9 7.1	<1 0 59 <1 934 1034 997 1237 3316 history2 2 2 1 0 history2 1.9 7.0
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	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2 <i>current</i> 3.6 10.4 24.5	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1 0 <u>history1</u> 1.9 7.1 21.5	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1 0 history2 1.9 7.0 20.7
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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 220 20 20 20 20 20 20 20 20	2 0 61 <1 912 1073 999 1198 3164 <i>current</i> 4 <1 2 <i>current</i> 3.6 10.4 24.5 <i>current</i>	3 0 59 <1 952 1052 983 1209 3556 history1 2 <1 0 history1 1.9 7.1 21.5 history1	<1 0 59 <1 934 1034 997 1237 3316 history2 2 1 0 history2 1.9 7.0 20.7 history2



OIL ANALYSIS REPORT

VISUAL



			methou	iiiiii/base	current		
	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$ \frown $	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
5/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Apr25/23 Sep14/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROP		method	limit/base	current	history1	history
	Visc @ 100°C	cSt	ASTM D445		14.0	13.9	13.8
	GRAPHS						
	Ferrous Alloys						
23	30 iron		Λ				
Apr25/23	25 - nickel	/		1			
-	20-	/		1			
	<u>ة</u> 15-	1		1			
	10-	1	1				
	5						
				a factor of the			
	5 50 0 12	(21- 	23	/23			
	Aug 18/20 Feb 25/21	Jun30/21 Jul9/22	Apr25/23	Sep14/23			
	Non-ferrous Met		1	07			
	¹⁰ T	1.5					
	copper						
	8 tin						
	6-						
	Ma						
	4+	1	1				
	2	\checkmark	1	1			
	2	\leq	1	1			
	0	22		2			
	0	Jul9/22	\pr25/23	sep 14/23			
	Aug18/20	7	Apr25/23	Sep 14/23			
	0	7	Apr25/23		Base Number		
	Uiscosity @ 100°	7	Api25/23	12.	⁰ T		
	0 000000000000000000000000000000000000	7	Apr25/23	12.			
	Uiscosity @ 100°	7	Ap/25/23	12.	Base		
	Uiscosity @ 100°	7	Apr25/23	12.	Base		
	0 00281 Crypped Viscosity @ 1000 20 19 4 Abnormal 17 50016 15 5	7	Apr25/23	12.	Base		\square
	0 020 1020 1000 Viscosity @ 1000 19 Abnomal 17 0-001) 15 14 4	7	Apr25/23	12.	Base		
	0 00281 Crypped Viscosity @ 1000 20 19 4 Abnormal 17 50016 15 5	7	Apr25/23	12. (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)			
	Viscosity @ 100°	c	A	12.) 10.) (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (c)(0.0)			\bigcap
	Viscosity @ 100°	c	A	12.) 10.) (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (b)(0.8.) 10.0 (c)(0.0)		30/21	5523
	Uiscosity @ 100°	7	A	12.1 10.1 (0)HOX 00 4.1 2.1		Jun30,21 Ju19122	Apr25/23
	0 0 0 0 0 0 0 0 0 0 0 0 0 0		Apr25/23	12.1 (0)HOX Bull aquini vase 2.1 (0)HOX bull aquini vase 2.1 (0) (0)HOX bull aquini vase 2.1 (0) (0)HOX bull aquini vase (0) (0)HOX bull aquini vase (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)	Feb25/2/1	7	
Laboratory	Viscosity @ 100° Viscosity @ 100° Abnomal Cooling Coo	r C 	eziszudy son Ave., Ca	12.1 (0)HOX Bul (0)HOX Bul aquun 4.1 2.1 0.1 EZUH I das rry, NC 27511	Feb25/2/1	ironmental - 654 - F	lichmond Hau
Sample No.	Viscosity @ 100° Viscosity @ 100° Abnomal Control 15 Abnomal Control 15 Control 15	501 Madia Received	EUSZUNA EUSZUNA son Ave., Ca	12. 10. 10. 10. 10. 10. 10. 10. 10	Feb25/2/1	ironmental - 654 - F	lichmond Hau 00 Lewis R
Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100°	501 Madia Received Diagnos	son Ave., Ca d : 19 sed : 20 s	12.) 10.)	Feb25/2/1	ironmental - 654 - F	l ichmond Hau 00 Lewis Ro Chester,
Sample No. Lab Number Unique Number	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100°	501 Madia Received	son Ave., Ca d : 19 sed : 20 s	12. 10. 10. 10. 10. 10. 10. 10. 10	Feb25/2/1	ironmental - 654 - F 118	lichmond Hau 00 Lewis R
Sample No. Lab Number Unique Number Test Package sample report,	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100°	501 Madia Received Diagnos Diagnost	son Ave., Ca d : 19 s ed : 20 s tician : We	12.) 10.)	Feb25/2/1	ironmental - 654 - F 118 Contact: S	lichmond Hau 00 Lewis R Chester, US 23

Submitted By: TECHNICIAN ACCOUNT