

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (30 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.



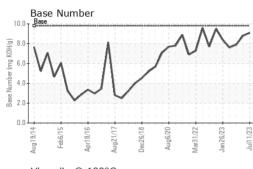


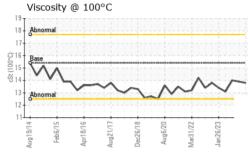
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0088389	GFL0070060	GFL0075223
Sample Date		Client Info		11 Jul 2023	30 May 2023	24 Apr 2023
Machine Age	hrs	Client Info		11477	11303	61836
Oil Age	hrs	Client Info		61836	61836	61836
Oil Changed		Client Info		N/A	Not Changd	N/A
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	>130	20	13	9
Chromium	ppm	ASTM D5185m	>10	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	<1
Lead	ppm	ASTM D5185m	>20	<1	0	0
Copper	ppm	ASTM D5185m	>125	1	<1	0
Tin	ppm	ASTM D5185m	>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 1	history2 0
	ppm ppm					
Boron		ASTM D5185m	0	2	1	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	1 5	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 57	1 5 55	0 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 57 <1	1 5 55 <1	0 0 56 <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 57 <1 989	1 5 55 <1 842	0 0 56 <1 950 1075 954
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 57 <1 989 1090	1 5 55 <1 842 892	0 0 56 <1 950 1075
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 57 <1 989 1090 1051	1 5 55 <1 842 892 864	0 0 56 <1 950 1075 954
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 57 <1 989 1090 1051 1330	1 5 55 <1 842 892 864 1023	0 0 56 <1 950 1075 954 1233
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	0 0 60 0 1010 1070 1150 1270 2060	2 0 57 <1 989 1090 1051 1330 3744	1 5 55 <1 842 892 864 1023 2847	0 0 56 <1 950 1075 954 1233 3272
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 57 <1 989 1090 1051 1330 3744 current	1 5 55 <1 842 892 864 1023 2847 history1	0 0 56 <1 950 1075 954 1233 3272 history2
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 57 <1 989 1090 1051 1330 3744 current 4	1 5 55 <1 842 892 864 1023 2847 history1 3	0 0 56 <1 950 1075 954 1233 3272 history2 3
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base >25	2 0 57 <1 989 1090 1051 1330 3744 current 4 <1	1 5 55 <1 842 892 864 1023 2847 history1 3 <1	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1
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	0 0 0 1010 1070 1150 1270 2060 limit/base >25	2 0 57 <1 989 1090 1051 1330 3744 current 4 <1 2	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2	0 0 56 <1 950 1075 954 1233 3272 history2 3 <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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	2 0 57 <1 989 1090 1051 1330 3744 current 4 <1 2 current	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2 2 history1	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	2 0 57 <1 989 1090 1051 1330 3744 current 4 <1 2 current 0.6	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2 2 history1 0.4	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1 0 history2 0.2
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> >20	2 0 57 <1 989 1090 1051 1330 3744 <i>current</i> 4 <1 2 <i>current</i> 0.6 8.7	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2 2 history1 0.4 6.9	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1 0 vistory2 0.2 5.6
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 >6 >20	2 0 57 <1 989 1090 1051 1330 3744 current 4 <1 2 current 0.6 8.7 20.1	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2 2 history1 0.4 6.9 19.2	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1 0 Vhistory2 0.2 5.6 16.8
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 2260 2060 225 220 220 1imit/base >6 >20 >20 30	2 0 57 <1 989 1090 1051 1330 3744 <i>current</i> 4 <1 2 <i>current</i> 0.6 8.7 20.1 <i>current</i>	1 5 55 <1 842 892 864 1023 2847 history1 3 <1 2 2 history1 0.4 6.9 19.2 history1	0 0 56 <1 950 1075 954 1233 3272 history2 3 <1 0 0 history2 0.2 5.6 16.8 history2



OIL ANALYSIS REPORT

VISUAL





		White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	70.0	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
5/18	5/20 1/22		scalar	*Visual	NORML	NORML	NORML	NORML
Dec26/18	Aug6/20 Mar31/22 Jan26/23	Appearance 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	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.9	14.0
~	mm	GRAPHS						
		Ferrous Alloys						
	22 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	iron	٨	A .				
Dec26/18	Aug6/20 Mar31/22 Jan26/23	nickel	A r		A			
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		10 8 6 4 2 0	Dec26/1/8	Aug6/20		Base Number	r	
		ud G G G G G G G G G G G G G	Dec26/1/8	Aug6/20	CZ/LIJIP CZ/LIJIP 10.0		r	
		Und Strange (Constrained of the second of th	Dec26/1/8	AughZu Second	10.0	Base	r	1 M
		Und Stranger	Dec26/1/8	AughZu to Mara 1/22	10.0	Base		M
		Und Stranger	Dec26/1/8	Mar31/22	10.0	Base		M
		Und Stranger	Dec26/1/8	Aug6/20	10.0	Base M		M
		Viscosity @ 1000 Abnomal 0-001)15 10 Copper Isad 9//81/04 0-001 0-001 13 0-001 14 0-001 15 14 0-001 15 14 0-001 15 14 0-001 15 16 10 10 10 10 10 10 10 10 10 10	Dec26/1/8	Mar31/22 Mar31/22	10.0	Base M	r A	M
		Viscosity @ 1000 Abnomal Base Abnomal	Dec26/1/8	Mar31/22	0.0 8.0 HOX 0.0 Bui g	A second	r M	M
		Uiscosity @ 1000	Dec26/1/8	Mar31/22	10.0 (D)HOX Bull Jack 4.0 2.0	Asse M M M	, M	M
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		Viscosity @ 1000 Abnomal Abnomal	C C	~~^	10.0 (6,000) Bullion 4.0 2.0 0.0		N	ad 1/22
		Viscosity @ 1000 Abnomal Base Abnomal	C C	Aug6/20	10.0 (D)HOX Bull Jack 4.0 2.0	Asse M M M	Aug21/17 Dec2E/18 Aug6/20	Mar31/22 Jan26/23
, k	Laboratory	Uigon Ui		Mar31/22	10.0 (6)(HO) Bull Jan 4.0 (0)(HO) Bull Jan 4.0 2.0 (0)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)	Aug 19/14 Fedo/f1S	N	
	Sample No	y : WearCheck USA - : GFL0088389	81/973-90 501 Madii Received	CZUEREW czygoner son Ave., Ca d : 14.	10.0 (0)HOX Bull Jack 8.0 (0)HOX Bull Jack 8.0 (0)HOX Bull Jack 8.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 900 M Jack 8.0 (0) 900 M Jack 8.0	Aug 19/14 Fedo/f1S	MugE/Z0 Pieczer/a MugE/Z0 Auge/Z0 A	84 - Clarksvi ⁄liller Bouleva
	Sample No Lab Numb	y : WearCheck USA - GFL0088389 er : 05899172	C BU97299	cziggung son Ave., Ca d : 14, ed : 17,	10.0 (0)H(X) Bull 20 (0)H(X) Bull 20 (0)H(X) Bull 20 (0) (0)H(X) Bull 20 (0) (0)H(X) Bull 20 (0) (0)H(X) Bull 20 (0)H(X) Bull	Aug 19/14 Fedo/f1S	MugE/Z0 Pieczer/a MugE/Z0 Auge/Z0 A	84 - Clarksvi ⁄liller Bouleva Clarksville, 1
	Sample No Lab Numb Unique Num	y : WearCheck USA - GFL0088389 er : 05899172 ber : 10560528	81/973-90 501 Madii Received	cziggung son Ave., Ca d : 14, ed : 17,	10.0 (0)HOX Bull Jack 8.0 (0)HOX Bull Jack 8.0 (0)HOX Bull Jack 8.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 6.0 (0) 900 Will Jack 8.0 (0) 900 Will Jac	Aug 19/14 Fedo/f1S	Angezon Hutironmental - 0 699 Jack M	84 - Clarksvi ⁄liller Bouleva Clarksville, ∃ US 370
	Sample No Lab Numb Unique Num Test Packa	y : WearCheck USA - GFL0088389 er : 05899172 ber : 10560528	501 Madii Received Diagnos	czyleew son Ave., Ca d : 14, ed : 17, tician : We	10.0 (0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(0)(Aug 19/14 Fedo/f1S	LVIZBWY Contact: ROBE	84 - Clarksvi ⁄liller Bouleva Clarksville, ∃ US 370

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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