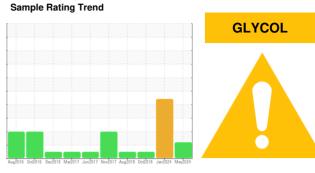


OIL ANALYSIS REPORT

[WO35904] **INTERNATIONAL TRK 163**

Diesel Engine

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



DIAGNOSIS

Recommendation

We advise that you check for possible coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Sodium and/or potassium levels are high.

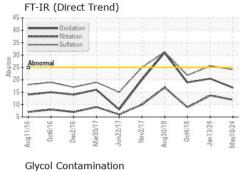
Fluid Condition

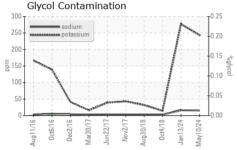
The BN result indicates that there is suitable alkalinity remaining in the oil.

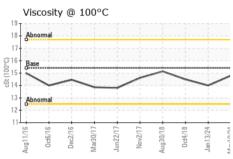
IAL)						
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0903644	WC0822320	WCM1384908
Sample Date		Client Info		10 May 2024	13 Jan 2024	04 Oct 2018
Machine Age	mls	Client Info		461250	450164	157895
Oil Age	mls	Client Info		11106	0	0
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				ABNORMAL	ABNORMAL	NORMAL
CONTAMINATION	١	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	63	<u> </u>	16
Chromium	ppm	ASTM D5185m	>20	3	10	<1
Nickel	ppm	ASTM D5185m	>4	0	3	<1
Titanium	ppm	ASTM D5185m		0	1	<1
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	9	<u>^</u> 20	4
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	7	6	<1
Tin	ppm	ASTM D5185m	>15	0	<1	0
Antimony	ppm	ASTM D5185m	>10			0
Vanadium		ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	<1	0
	ppm	ASTIVI DSTOSIII		U	<1	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	5	4	105
	ppm ppm					
Boron		ASTM D5185m	0	5	4 0 64	105
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 0	4 0	105 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 0 64	4 0 64	105 0 8
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 0 64 <1	4 0 64 2	105 0 8 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	5 0 64 <1 944	4 0 64 2 818	105 0 8 <1 127
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	5 0 64 <1 944 1193	4 0 64 2 818 1052	105 0 8 <1 127 2118
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	5 0 64 <1 944 1193 1072	4 0 64 2 818 1052 887	105 0 8 <1 127 2118 962
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270	5 0 64 <1 944 1193 1072	4 0 64 2 818 1052 887 1112	105 0 8 <1 127 2118 962 1116
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 0 1010 1070 1150 1270 2060	5 0 64 <1 944 1193 1072 1304 3759	4 0 64 2 818 1052 887 1112 2988	105 0 8 <1 127 2118 962 1116 2991
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	5 0 64 <1 944 1193 1072 1304 3759 current	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28	105 0 8 <1 127 2118 962 1116 2991 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	5 0 64 <1 944 1193 1072 1304 3759 current	4 0 64 2 818 1052 887 1112 2988 history1	105 0 8 <1 127 2118 962 1116 2991 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	5 0 64 <1 944 1193 1072 1304 3759 current 10 15	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16	105 0 8 <1 127 2118 962 1116 2991 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 ▲ 244	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277	105 0 8 <1 127 2118 962 1116 2991 history2 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25 >20	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 ▲ 244 NEG current	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 244 NEG current 2.6	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1 2.4	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982 method	0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25 >20	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 ▲ 244 NEG current	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 ▲ 244 NEG current 2.6 11.9 24.1	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1 2.4 13.7 25.6	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2 0.4 8.9 21.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982 *ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 *Method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 244 NEG current 2.6 11.9 24.1 current	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1 2.4 13.7 25.6 history1	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2 0.4 8.9 21.8 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	5 0 64 <1 944 1193 1072 1304 3759 current 10 15 ▲ 244 NEG current 2.6 11.9 24.1	4 0 64 2 818 1052 887 1112 2988 history1 ▲ 28 16 ▲ 277 NEG history1 2.4 13.7 25.6	105 0 8 <1 127 2118 962 1116 2991 history2 4 2 14 NEG history2 0.4 8.9 21.8

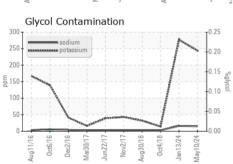


OIL ANALYSIS REPORT







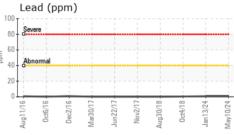


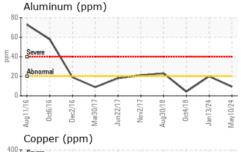
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

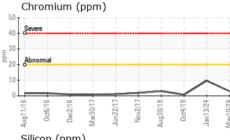
I LOID I HOI LI	TTILO	method	IIIIII basc	Current	Thistory	Thotor y Z
Visc @ 100°C	cSt	ASTM D445	15.4	14.8	14.0	14.49

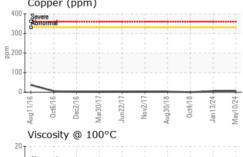
Iron 250 T	n (pp	om)							
200 Seve	re							-	
E 150 Abno	ormal							\wedge	
50					_/	<u> </u>	\/	/	/
0 11/11gr	0ct6/16	Dec2/16 +	lar30/17 -	un22/17+-	Nov2/17	81/0£Br	Oct4/18	an 13/24	ay10/24
Aug11/16	0ct6/16 -	Dec2/16 +	Mar30/17 -	Jun22/17+-	Nov2/17	Aug30/18	0ct4/18	Jan13/24	May10/24

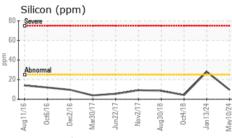
GRAPHS

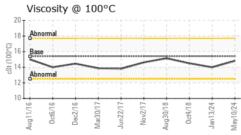


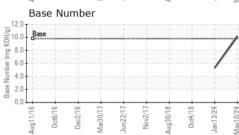
















Certificate 12367

Laboratory Sample No. Lab Number : 06184024

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0903644

Received **Tested** Diagnosed Unique Number : 11035350

: 20 May 2024 : 22 May 2024

: 22 May 2024 - Jonathan Hester Test Package : MOB 1 (Additional Tests: Glycol, TBN)

ELIZABETHTOWN, NC

US 28337 Contact: CHRIS CAMPBELL chrisc@campbelloil.net T: (910)862-0778

CAMPBELL OIL COMPANY

PO BOX 637, 418 PEANUT ROAD

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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)

Submitted By: Cassie Priest

F: (910)862-6173