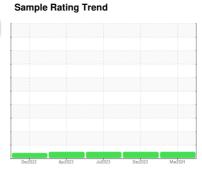


OIL ANALYSIS REPORT

BARTO 7090 [BARTO]

Diesel Engine

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





Recommendation

Resample at the next service interval to monitor.

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the

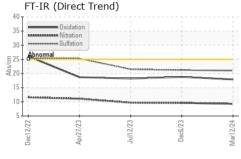
Fluid Condition

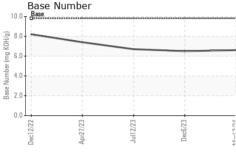
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

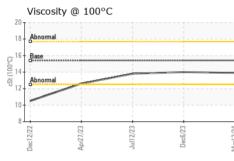
SAMPLE INFORMATION method limit/bass current history1 history2	AAL)		Deczuzz	Aprzuz3	JUI2023 Dec2023	mar2UZ4		
Sample Date Client Info 12 Mar 2024 06 Dec 2023 12 Jul 2028 Machine Age mils Client Info 199574 155055 114541 40000 Coil Age mils Client Info A1519 43514 40000 Changed NORMAL NORMAL	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Machine Age mls Client Info 199574 158055 114541 Oil Age mls Client Info 41519 43514 40000 Oil Changed Client Info Changed	Sample Number		Client Info		SBP0006490	SBP0005055	SBP0004380	
Oil Age mls Client Info 41519 43514 40000 Oil Changed Client Info Changed Ch	Sample Date		Client Info		12 Mar 2024	06 Dec 2023	12 Jul 2023	
Oil Changed Sample Status Client Info Changed NORMAL Changed NoRMAG Changed NoRMAG Changed NoRMAG Changed NoRMAG Changed NoRMAG Changed NoRMAG Changed NoRMAG Change NEG Change NEG Change NEG Change NEG Change NEG Change NEG NEG NEG </th <th>Machine Age</th> <th>mls</th> <th>Client Info</th> <th></th> <th>199574</th> <th>158055</th> <th>114541</th>	Machine Age	mls	Client Info		199574	158055	114541	
NORMAL NORMAL NORMAL	Oil Age	mls	Client Info		41519	43514	40000	
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 19 19 25 Chromium ppm ASTM D5185m >5 2 1 2 Nickel ppm ASTM D5185m >2 1 <1 <1 <1 <1 0 1 1<	Oil Changed		Client Info		Changed	Changed	Changed	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 19 19 25 Chromium ppm ASTM D5185m >5 2 1 <1	CONTAMINATION	١	method	limit/base	current	history1	history2	
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0	
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium ppm ASTM D5185m >5 2 1 2 Nickel ppm ASTM D5185m >2 <1	WEAR METALS		method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>80	19	19	25	
Titanium ppm ASTM D5185m <1 0 0 Silver ppm ASTM D5185m >3 <1 <1 0 Aluminum ppm ASTM D5185m >30 6 8 14 Lead ppm ASTM D5185m >30 0 0 0 Copper ppm ASTM D5185m >150 8 24 39 Tin ppm ASTM D5185m >5 <1 <1 <1 <1 <1 <1 <0 0 Cadmium ppm ASTM D5185m <1 0 0 0 <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 2 2 2 Barium ppm ASTM D5185m 0 <1 1 2 2 2 Barium ppm ASTM D5185m<	Chromium	ppm	ASTM D5185m	>5	2	1	2	
Silver ppm ASTM D5185m >3 <1 <1 0 Aluminum ppm ASTM D5185m >30 6 8 14 Lead ppm ASTM D5185m >30 0 0 0 Copper ppm ASTM D5185m >150 8 24 39 Tin ppm ASTM D5185m >5 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <0 0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 <0 </td <td>Nickel</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>2</td> <th><1</th> <td><1</td> <td><1</td>	Nickel	ppm	ASTM D5185m	>2	<1	<1	<1	
Aluminum	Titanium	ppm	ASTM D5185m		<1	0	0	
Lead ppm ASTM D5185m >30 0 0 0 Copper ppm ASTM D5185m >150 8 24 39 Tin ppm ASTM D5185m >5 <1 <1 <1 <1 Vanadium ppm ASTM D5185m >5 <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 2 2 2 Barium ppm ASTM D5185m 0 -1 0 1 1 2 2 2 Barium ppm ASTM D5185m 0 -1 0 1 1 2 2 2 Barium ppm ASTM D5185m 0 -1 1 2 2 2 Barium ppm ASTM D5185m 0 0	Silver	ppm	ASTM D5185m	>3	<1	<1	0	
Copper ppm ASTM D5185m >150 8 24 39 Tin ppm ASTM D5185m >5 <1	Aluminum	ppm	ASTM D5185m	>30	6	8	14	
Tin ppm ASTM D5185m >5 <1 <1 <1 Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 2 2 Barium ppm ASTM D5185m 0 <1 0 1 Molybdenum ppm ASTM D5185m 0 <1 0 1 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 983 982 853 Calcium ppm ASTM D5185m 1070 1126 1097 1376 Phosphorus ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 <th< td=""><td>Lead</td><td>ppm</td><td>ASTM D5185m</td><td>>30</td><th>0</th><td>0</td><td>0</td></th<>	Lead	ppm	ASTM D5185m	>30	0	0	0	
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 2 2 Barium ppm ASTM D5185m 0 <1 0 1 Molybdenum ppm ASTM D5185m 60 63 61 59 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 983 982 853 Calcium ppm ASTM D5185m 1070 1126 1097 1376 Phosphorus ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current <	Copper	ppm	ASTM D5185m	>150	8	24	39	
Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 2 2 Barium ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>5	<1	<1	<1	
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 1 2 2 Barium ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		<1	0	0	
Boron	Cadmium	ppm	ASTM D5185m		<1	0	0	
Barium ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum ppm ASTM D5185m 60 63 61 59 Manganese ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	1	2	2	
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 983 982 853 Calcium ppm ASTM D5185m 1070 1126 1097 1376 Phosphorus ppm ASTM D5185m 1150 1001 979 932 Zinc ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/:1mm	Barium	ppm	ASTM D5185m	0	<1	0	1	
Magnesium ppm ASTM D5185m 1010 983 982 853 Calcium ppm ASTM D5185m 1070 1126 1097 1376 Phosphorus ppm ASTM D5185m 1150 1001 979 932 Zinc ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm "ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm "ASTM D7415 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>63</th> <td>61</td> <td>59</td>	Molybdenum	ppm	ASTM D5185m	60	63	61	59	
Calcium ppm ASTM D5185m 1070 1126 1097 1376 Phosphorus ppm ASTM D5185m 1150 1001 979 932 Zinc ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION *	Manganese	ppm	ASTM D5185m	0	<1	<1	<1	
Phosphorus ppm ASTM D5185m 1150 1001 979 932 Zinc ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm	Magnesium	ppm	ASTM D5185m	1010	983	982	853	
Zinc ppm ASTM D5185m 1270 1301 1298 1224 Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % "ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm "ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm "ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm<	Calcium	ppm	ASTM D5185m	1070	1126	1097	1376	
Sulfur ppm ASTM D5185m 2060 2791 2380 2276 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m >20 8 16 25 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Phosphorus	ppm	ASTM D5185m	1150	1001	979	932	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m 4 1 2 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Zinc	ppm	ASTM D5185m	1270	1301	1298	1224	
Silicon ppm ASTM D5185m >20 6 10 6 Sodium ppm ASTM D5185m 4 1 2 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Sulfur	ppm	ASTM D5185m	2060	2791	2380	2276	
Sodium ppm ASTM D5185m 4 1 2 Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2			method	limit/base	current	history1	history2	
Potassium ppm ASTM D5185m >20 8 16 25 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Silicon	ppm	ASTM D5185m	>20	6	10	6	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Sodium	ppm	ASTM D5185m		4	1	2	
Soot % % *ASTM D7844 >3 0.6 0.5 0.6 Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Potassium	ppm	ASTM D5185m	>20	8	16	25	
Nitration Abs/cm *ASTM D7624 >20 9.3 9.6 9.7 Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation Abs/.1mm *ASTM D7415 >30 21.0 21.2 21.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Soot %	%	*ASTM D7844	>3	0.6	0.5	0.6	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.9 18.8 18.2	Nitration	Abs/cm	*ASTM D7624	>20	9.3	9.6	9.7	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.0	21.2	21.5	
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
Base Number (BN) mg KOH/g ASTM D2896 9.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.9	18.8	18.2	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.6	6.5	6.7	

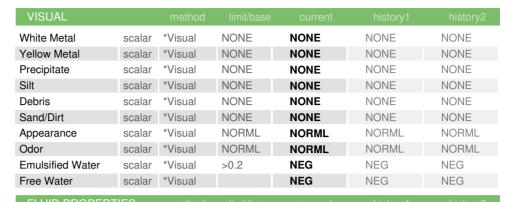


OIL ANALYSIS REPORT



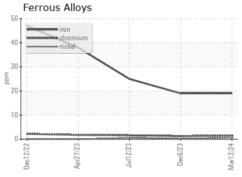




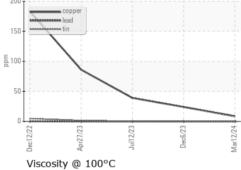


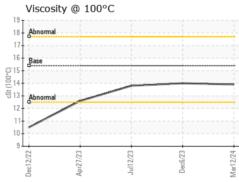
FLUID PROPERTIES			memod			flistory i	HISTORYZ
	Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0	13.8

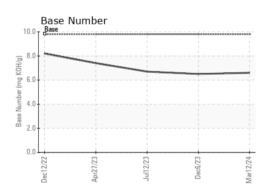
GRAPHS



Non-ferrous Metals











Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Lab Number : 06156600 Unique Number : 10992023

: SBP0006490 Test Package : FLEET

Received **Tested**

: 22 Apr 2024 : 23 Apr 2024 Diagnosed : 23 Apr 2024 - Wes Davis

108 E Bay Road Plattsmouth, NE

SCHMIDT TRANSPORTATION - BARTO

US 68048 Contact: Service Manager

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)

Report Id: SCHBARTO [WUSCAR] 06156600 (Generated: 04/23/2024 16:33:50) Rev: 1

Submitted By: AARON MERITHEW

T:

F: