

OIL ANALYSIS REPORT

Sampi

Sample Rating Trend NORMAL



Machine Id
93061
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (5 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

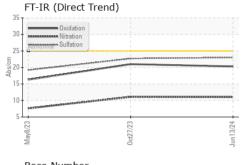
Fluid Condition

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

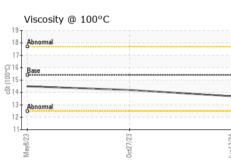
Sample Number Client Info SBP0006569 SBP0004334 SBP0001634 Sample Date Client Info 13 Jun 2024 27 Oct 2023 08 May 2023 Machine Age mls Client Info 198470 189524 5000 Oli Age mls Client Info S8946 8354 5000 Oli Age Ms Client Info Changed N/A Changed NORMAL NO	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Client Info							
Machine Age mls Client Info 198470 189524 5000 Oil Age mls Client Info 8946 8354 5000 Oil Changed Client Info Changed N/A N/A Changed N/A N/A N/A N/A N/A N/A N/A N/A <							
Oil Age mls Client Info 8946 8354 5000 Oil Changed Client Info Changed N/A Changed Sample Status Client Info Changed N/A Changed NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history2 Euel WC Method >5 <1.0 <1.0 <1.0 Water WC Method NEG NEG NEG NEG WEAR METALS mothod limit/base current history1 history2 Iron ppm ASTM DS185m >80 25 20 9 Chromium ppm ASTM DS185m >80 25 20 9 Chromium ppm ASTM DS185m >2 <1 1 <1 <1 Iron ppm ASTM DS185m >30 2 2 2 0 Lead ppm ASTM DS185m	·	mle					
Client Info Changed NORMAL NORMAL NORMAL NORMAL							
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CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	-		Oliciti IIIIo				Ü
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Water Glycol WC Method WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >80 25 20 9 Chromium ppm ASTM D5185m >5 1 1 <1 <1 Nickel ppm ASTM D5185m >2 <1 <1 <1 <1 Sliver ppm ASTM D5185m >2 <1 <1 <1 <1 Sliver ppm ASTM D5185m >3 0 <1 0 Sliver ppm ASTM D5185m >30 0 1 1 Copper ppm ASTM D5185m >30 0 1 1 Copper ppm ASTM D5185m >5 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 <1 <1 <1 Cadmium							
WEAR METALS							
WEAR METALS				>0.2	-		
Iron			WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >5 1 1 <1 <1 Nickel ppm ASTM D5185m >2 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>80			9
Silver	Chromium	ppm	ASTM D5185m	>5	1	1	<1
Silver	Nickel	ppm		>2			
Aluminum ppm ASTM D5185m >30 2 2 0 Lead ppm ASTM D5185m >30 0 1 1 Copper ppm ASTM D5185m >150 2 1 <1	Titanium	ppm	ASTM D5185m		<1	0	0
Lead	Silver	ppm	ASTM D5185m	>3			
Copper ppm ASTM D5185m >150 2 1 <1 Tin ppm ASTM D5185m >5 0 <1	Aluminum	ppm	ASTM D5185m	>30	2	2	0
Tin	Lead	ppm	ASTM D5185m	>30	0	1	1
Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 11 9 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 56 60 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 998 1007 978 Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1	Copper	ppm	ASTM D5185m	>150	2	1	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 11 9 5 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 -1 -1 -1 -1 Manganese ppm ASTM D5185m 0 -1 -1 -1 -1 Magnesium ppm ASTM D5185m 1010 998 1007 978 Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1150 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit	Tin	ppm	ASTM D5185m	>5	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 56 60 62 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 56 60 62 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 998 1007 978 Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1070 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >3	Boron	ppm	ASTM D5185m	0	11	9	5
Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 998 1007 978 Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1150 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/:1mm *ASTM D7415 </td <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium ppm ASTM D5185m 1010 998 1007 978 Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1150 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m >20 4 2 2 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>60</td> <th>56</th> <td>60</td> <td>62</td>	Molybdenum	ppm	ASTM D5185m	60	56	60	62
Calcium ppm ASTM D5185m 1070 1260 1158 1083 Phosphorus ppm ASTM D5185m 1150 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method li	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1082 1013 1057 Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation A	Magnesium	ppm	ASTM D5185m	1010	998	1007	978
Zinc ppm ASTM D5185m 1270 1333 1360 1290 Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D	Calcium	ppm	ASTM D5185m	1070	1260	1158	1083
Sulfur ppm ASTM D5185m 2060 3598 3125 3798 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Phosphorus	ppm	ASTM D5185m	1150	1082	1013	1057
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Zinc	ppm	ASTM D5185m	1270	1333	1360	1290
Silicon ppm ASTM D5185m >20 6 8 5 Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Sulfur	ppm	ASTM D5185m	2060	3598	3125	3798
Sodium ppm ASTM D5185m 6 5 4 Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Silicon	ppm	ASTM D5185m	>20	6	8	5
INFRA-RED	Sodium	ppm	ASTM D5185m		6	5	4
Soot % % *ASTM D7844 >3 0.4 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Potassium	ppm	ASTM D5185m	>20	4	2	2
Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 >20 11.0 11.1 7.6 Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3		%	*ASTM D7844	>3	0.4	0.5	0.2
Sulfation Abs/.1mm *ASTM D7415 >30 23.0 22.7 19.2 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3	Soot %						
Oxidation Abs/.1mm *ASTM D7414 >25 20.3 21.0 16.3		Abs/cm	*ASTM D7624	>20	11.0	11.1	7.0
	Nitration						
	Nitration Sulfation	Abs/.1mm	*ASTM D7415	>30	23.0	22.7	19.2
	Nitration Sulfation FLUID DEGRADA	Abs/.1mm	*ASTM D7415 method	>30 limit/base	23.0 current	22.7 history1	19.2 history2

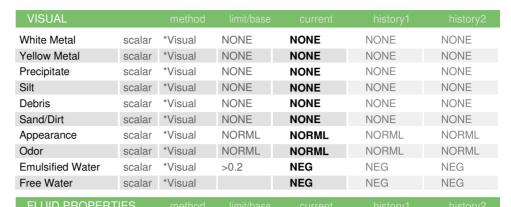


OIL ANALYSIS REPORT



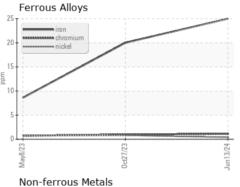
Base Numbe	er 	
8.0 8.0 0.0 8.0 0.0 4.0 0.0 8.0 0.0 8.0 0.0 8.0 0.0 0.0 8.0 0.0 0		
4.0 4.0 Mmbe		
2.0		
0.0		
May8/23	0ct27/23	ACC11

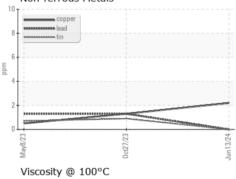


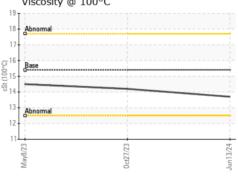


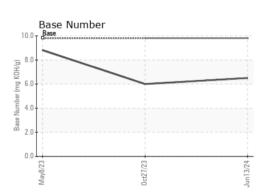
I LOID I NOI LI	TILO	memou			HISTOLAL	HISTOLYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	14.2	14.5

GRAPHS













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : SBP0006569 Lab Number : 06212805 Unique Number : 11085669

Tested Diagnosed Test Package : FLEET

Received : 17 Jun 2024 : 19 Jun 2024

: 19 Jun 2024 - Wes Davis

Sapp Bros. Fleet - Norfolk Location 1216 W. Monroe Ave.

Norfolk, NE US 68701 Contact: Ty Zelmer

tzellmer@sappbros.net T: (402)371-7372

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)