

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- QTS)

### 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.

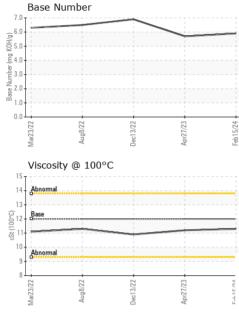
#### Fluid Condition

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

•		Mar2022	Aug2022	Dec2022 Apr2023	Feb2024	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0110862	PCA0095610	PCA0081261
Sample Date		Client Info		15 Feb 2024	27 Apr 2023	13 Dec 2022
Machine Age	mls	Client Info		178744	126946	101717
Oil Age	mls	Client Info		178744	101717	76402
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>110	22	20	20
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	1
Aluminum	ppm	ASTM D5185m	>25	8	10	14
Lead	ppm	ASTM D5185m	>45	0	0	0
Copper	ppm	ASTM D5185m	>85	1	1	2
Tin	ppm	ASTM D5185m	>4	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium		ASTM D5185m				0
Gaumum	ppm	ASTIVI DUTOJITI		0	0	0
ADDITIVES	ррп	method	limit/base	current	0 history1	history2
			limit/base	current	history1	
ADDITIVES	ppm	method ASTM D5185m			-	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	2	current 2	history1 3 0	history2 7 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0	current 2 3	history1 3	history2 7
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 2 3 64	history1 3 0 68	history2 7 0 65
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0	current 2 3 64 0	history1 3 0 68 <1	history2 7 0 65 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950	Current 2 3 64 0 889	history1 3 0 68 <1 997	history2 7 0 65 <1 866
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	Current 2 3 64 0 889 1103	history1 3 0 68 <1 997 1163	history2 7 0 65 <1 866 1206
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050 995	Current 2 3 64 0 889 1103 1009	history1 3 0 68 <1 997 1163 1047	history2 7 0 65 <1 866 1206 962
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180	Current 2 3 64 0 889 1103 1009 1212	history1 3 0 68 <1 997 1163 1047 1303	history2 7 0 65 <1 866 1206 962 1186
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current 2 3 64 0 889 1103 1009 1212 2840	history1 3 0 68 <1 997 1163 1047 1303 3428	history2 7 0 65 <1 866 1206 962 1186 3133
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600	Current 2 3 64 0 889 1103 1009 1212 2840 Current	history1 3 0 68 <1 997 1163 1047 1303 3428 history1	history2 7 0 65 <1 866 1206 962 1186 3133 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>limit/base</b>	current           2           3           64           0           889           1103           1009           1212           2840           current           6	history1           3           0           68           <1           997           1163           1047           1303           3428           history1           5	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180 2600 <b>limit/base</b>	current           2           3           64           0           889           1103           1009           1212           2840           current           6           0	history1           3           0           68           <1           997           1163           1047           1303           3428           history1           5           2	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30	current           2           3           64           0           889           1103           1009           1212           2840           current           6           0           11	history1           3           0           68           <1           997           1163           1047           1303           3428           history1           5           2           13	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >20 <b>limit/base</b>	Current 2 3 64 0 889 1103 1009 1212 2840 Current 6 0 11 1	history1         3         0         68         <1         997         1163         1047         1303         3428         history1         5         2         13         history1	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28         history2
ADDITIVES 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	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>limit/base</b> >30 20 <b>limit/base</b>	current           2           3           64           0           889           1103           1009           1212           2840           current           6           0           111           current           0           100	history1         3         0         68         <1         997         1163         1047         1303         3428         history1         5         2         13         history1         0.6	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28         history2         0.7
ADDITIVES 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	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>I</b> imit/base >30 220 <b>I</b> imit/base >3 >20	current           2           3           64           0           889           1103           1009           1212           2840           current           6           0           11           current           0.8           9.9	history1           3           0           68           <1           997           1163           1047           1303           3428           history1           5           2           13           history1           0.6           9.2	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28         history2         0.7         10.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7185M         *ASTM D7624         *ASTM D7624         *ASTM D7415	2 0 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >30 220 <b>imit/base</b> >30 >20 >30	2         3         64         0         889         1103         1009         1212         2840         current         6         0         111         current         0.8         9.9         22.6         current	history1         3         0         68         <1         997         1163         1047         1303         3428         history1         5         2         13         history1         0.6         9.2         20.1         history1	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28         history2         0.7         10.4         23.6         history2
ADDITIVES 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	method           ASTM D5185m           ASTM D5185m	2 0 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >30 220 <b>imit/base</b> >30 >20 >30	Current         2         3         64         0         889         1103         1009         1212         2840         current         6         0         11         current         0.8         9.9         22.6	history1         3         0         68         <1         997         1163         1047         1303         3428         history1         5         2         13         history1         0.6         9.2         20.1	history2         7         0         65         <1         866         1206         962         1186         3133         history2         7         <1         28         history2         0.7         10.4         23.6



# **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
FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	12.00	11.3	11.2	10.9
GRAPHS						
Ferrous Alloys						
15 10 iron		 				
5 - nickel						
80						
5		1				
25-						
I5 <b>-</b>						
1 I I I I I I I I I I I I I I I I I I I						
15 0 5 0	2					
15 0 5 0	sc13/22	123/23	b15/24			
Mac23/22 0 5 0 5 10 5 1	Dec13/22	Api27/23	Feb 15/24			
15 0 5 0	_	Api27/23	Feb15/24			
Non-ferrous Meta	_	Api27/23	Feb15/24			
Non-ferrous Meta	_	Api27/23	Feb15/24			
Non-ferrous Meta	_	Apr27/23	Feb15/24			
Non-ferrous Meta	_	Apr27/23	Feb15/24			
Non-ferrous Meta	_	Api27/23	Feb 15/24			
Non-ferrous Meta	_	Api21/23	Feb15/24			
Non-ferrous Meta	_	Apr27123	Feb15/24			
Non-ferrous Meta	ls					
Non-ferrous Meta	ls					
Non-ferrous Meta	Is	Api27/23	Feb15/24			
Non-ferrous Meta	Is			Base Number	-	
Non-ferrous Meta	Is		47519 92	Base Number	-	
Non-ferrous Meta	Is		Fab:15/24	Base Number		

쎯 2.0 1.0 0.0

Mar23/22

Feb15/24.

: 20 Feb 2024

: 21 Feb 2024

: 21 Feb 2024 - Wes Davis



Test Package : FLEET Contact: GEORGE EDWARDS Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. gedwards@nwwhite.com \* - 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)

Dec13/22

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

Received

Diagnosed

Tested

Apr27/23 .

Aug8/22 .

Mar23/22

: PCA0110862

Laboratory Sample No.

Lab Number : 06094035

Unique Number : 10886888

Apr27/23 -

COLUMBIA, SC

US 29210

T:

F:

100 INDEPENDENCE BLVD

Feb15/24 -

Dec13/22 -

NW WHITE & CO - COLUMBIA DIVISION

Aug8/22