

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

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## NORMAL



Component Diesel Engine

Fluid

## PETRO CANADA DURON SHP 10W30 (15 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.

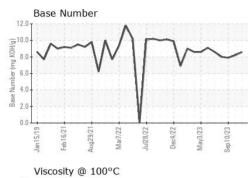
#### Fluid Condition

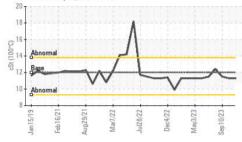
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0116219	PCA0108087	PCA0102794
Sample Date		Client Info		15 Feb 2024	07 Nov 2023	10 Sep 2023
Machine Age	hrs	Client Info		12276	12276	12276
Oil Age	hrs	Client Info		12276	12276	12276
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	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	>100	5	11	24
Chromium	ppm	ASTM D5185m	>20	0	0	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	- 1	0	0	0
Silver			>3		0	0
	ppm	ASTM D5185m		0		
Aluminum	ppm	ASTM D5185m	>20	1	1	<1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	1	2	<1
Tin	ppm	ASTM D5185m	>15	0	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	0 current	0 history1	0 history2
	ppm ppm		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m	2	current 6	history1 8	history2 0
ADDITIVES Boron	ppm ppm	method ASTM D5185m ASTM D5185m	2 0	current 6 0	history1 8 0	history2 0 0
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50	current 6 0 59	history1 8 0 64	history2 0 0 67
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	current 6 0 59 0 936	history1 8 0 64 0 1040	history2 0 0 67 <1 1052
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 0 950 1050	current 6 0 59 0 936 1120	history1 8 0 64 0 1040 1124	history2 0 0 67 <1 1052 1218
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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 6 0 59 0 936 1120 1057	history1 8 0 64 0 1040 1124 1130	history2 0 67 <1 1052 1218 1073
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	2 0 50 950 1050 995 1180	Current 6 0 59 0 936 1120 1057 1217	history1  8  0  64  0  1040  1124  1130  1388	history2 0 67 <1 1052 1218 1073 1353
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 0 950 1050 995 1180 2600	Current 6 0 59 0 936 1120 1057 1217 3175	history1 8 0 64 0 1040 1124 1130 1388 3417	history2 0 0 67 <1 1052 1218 1073 1353 3519
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	current 6 0 59 0 936 1120 1057 1217 3175 current	history1  8  0  64  0  1040  1124  1130  1388  3417  history1	history2 0 67 <1 1052 1218 1073 1353 3519 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	current           6           0           59           0           936           1120           1057           1217           3175           current           3	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	2 0 50 950 1050 995 1180 2600	current           6           0           59           0           936           1120           1057           1217           3175           current           3           1	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4         1	history2         0         67         <1         1052         1218         1073         1353         3519         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> >25	current           6           0           59           0           936           1120           1057           1217           3175           current           3	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4
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> >25	current           6           0           59           0           936           1120           1057           1217           3175           current           3           1	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4         1	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4         <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 50 950 1050 995 1180 2600 <b>limit/base</b> >25	current           6           0           59           0           936           1120           1057           1217           3175           current           3           1           0	history1         8         0         64         0         1040         1124         130         1388         3417         history1         4         1         0	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2
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 <b>TS</b>	method           ASTM D5185m	2 0 50 0 950 1050 995 1180 2600 <b>Imit/base</b> >25 -20 <b>Imit/base</b>	current         6         0         59         0         936         1120         1057         1217         3175         current         3         1         0         current	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4         1         0         history1	history2         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2         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 <i>imit/base</i> >25 >20 <i>imit/base</i> >3 >20	current           6           0           59           0           936           1120           1057           1217           3175           current           3           1           0           current           0.1	history1         8         0         64         0         1040         1124         1130         1388         3417         history1         4         1         0         history1         0         0.3	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2         history2         0.6
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 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	current         6         0         59         0         936         1120         1057         1217         3175         current         3         1         0         current         0.1         6.8         17.5	history1         8         0         64         0         1040         1124         1388         3417         history1         4         1         0         history1         4         1         0         history1         0.3         8.5         18.4	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2         history2         0.6         9.4         18.8
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 <b>TS</b> ppm ppm ppm ppm	method         ASTM D5185m         ASTM D7185M         *ASTM D7624         *ASTM D7415         method	2 0 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3 >20 >30	current         6         0         59         0         936         1120         1057         1217         3175         current         3         1         0         current         0.1         6.8         17.5         current	history1         8         0         64         0         1040         1124         138         3417         history1         4         1         0         history1         4         1         0         history1         0.3         8.5         18.4         history1	history2         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2         history2         0.6         9.4         18.8         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 50 0 950 1050 995 1180 2600 <b>imit/base</b> >25 >20 <b>imit/base</b> >3 >20 >30	current         6         0         59         0         936         1120         1057         1217         3175         current         3         1         0         current         0.1         6.8         17.5	history1         8         0         64         0         1040         1124         1388         3417         history1         4         1         0         history1         4         1         0         history1         0.3         8.5         18.4	history2         0         0         67         <1         1052         1218         1073         1353         3519         history2         4         <1         2         history2         0.6         9.4         18.8

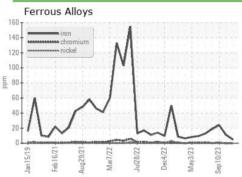


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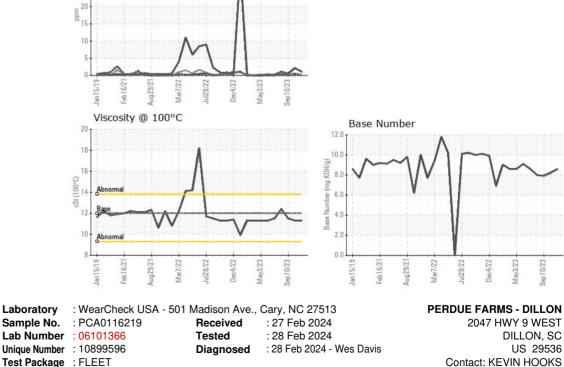


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	12.00	11.3	11.3	11.5
GRAPHS						



Non-ferrous Metals

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\* - 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)

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