

## **OIL ANALYSIS REPORT**

### Sample Rating Trend





Diesel Engine

PETRO CANADA DURON SHP 10W30 (20 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.

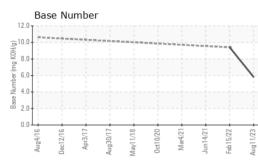
## Fluid Condition

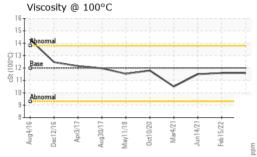
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number     Client Info     District Number     Notation of the second of							
SAMPLE INFORMATION     method     Imit/base     current     history2       Sample Number     Client Info     PCA0102875     PCA0057633     PCA00527633     PCA0527633     PCA0527633     PCA0527633     PCA0527633     PCA0527633     PCA0527633     PCA0527633     PCA0537666     PCA053766     PCA0537676	(21)						
Sample Number     Client Info     PCA0102875     PCA0067633     PCA0057633     PCA0057633     PCA0057240       Sample Date     Client Info     11 Aug 2023     15 Feb 2022     14 Jun 2021       Machine Age     mis     Client Info     289792     248001     225515       Oil Age     Client Info     289792     6000     14000       Oil Age     Client Info     289792     6000     14000       Oll Age     Client Info     289792     6000     14000       Oll Age     Client Info     Mark     NORMAL     NORMAL     NORMAL       Situer     WC Method     3-30     <1.0	•		Aug2016 Des2			-	history?
Sample Date     Client Info     11 Aug 2023     15 Feb 2022     14 Jun 2021       Machine Age     mis     Client Info     289792     6000     14000       Oil Age     mis     Client Info     289792     6000     14000       Oil Changed     Client Info     Changed     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     Imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0				mmubase			
Machine Age     mis     Client Info     289792     248901     225215       Dil Age     mis     Client Info     289792     6000     14000       Dil Age     mis     Client Info     289792     6000     14000       Dil Ghanged     Client Info     Changed							
Dil Age mls Client Info 289792 6000 14000   Dil Changed Client Info Changed Changed Changed Changed   Sample Status Imit/Dase current NoRMAL NORMAL NORMAL   CONTAMINATION method Imit/Dase current history1 history2   Fuel WC Method >3.0 <1.0		and a			-		
Dil Changed Sample Status Client Info Changed NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL   Control WC Method 33.0 <1.0	•						
Sample Status     NORMAL     NORMAL     NORMAL     NORMAL     NORMAL       CONTAMINATION     method     limit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	-	mis					
CONTAMINATION     method     imit/base     current     history1     history2       Fuel     WC Method     >3.0     <1.0	-		Client Info		-		
Fuel     WC Method     >3.0     <1.0     <1.0     <1.0       Silycol     WC Method     NEG     NEG     NEG     NEG       WEAR METALS     method     limit/base     current     history1     history2       ron     ppm     ASTM D5185m     >10     2     <1     1       Vickel     ppm     ASTM D5185m     >2     6     3     3     1       Silver     ppm     ASTM D5185m     >2     6     3     3     1       Oppm     ASTM D5185m     >2     6     3     3     2     3       Silver     ppm     ASTM D5185m     >2     0     0     1     1       Auminum     ppm     ASTM D5185m     >20     0     1     2     2       Cinn     ppm     ASTM D5185m     >20     0     <1     1     2       Antimony     ppm     ASTM D5185m     2     0     <1     0     2       Cinn     ppm	-				NORMAL	NORMAL	NORMAL
Bilycol     WC Method     NEG     NEG     NEG       WEAR METALS     method     limil/base     current     history1     history2       ron     ppm     ASTM D5185m     >10     2     <1	CONTAMINATI	ON	method	limit/base	current	history1	history2
WEAR METALS     method     limit/base     current     history1     history2       ron     ppm     ASTM D5185m     >130     59     7     43       Dromium     ppm     ASTM D5185m     >10     2     <1	<sup>=</sup> uel		WC Method	>3.0	<1.0	<1.0	<1.0
ron     ppm     ASTM D5185m     >130     59     7     43       Chromium     ppm     ASTM D5185m     >10     2     <1	Glycol		WC Method		NEG	NEG	NEG
ppm     ASTM D5185m     >10     2     <1     1       Nickel     ppm     ASTM D5185m     >4     0     0     <1	WEAR METALS	5	method	limit/base	current	history1	history2
Dromium     ppm     ASTM D5185m     >10     2     <1     1       Nickel     ppm     ASTM D5185m     >4     0     0     <1	ron	ppm	ASTM D5185m	>130	59	7	43
Nickel     ppm     ASTM D5185m     >4     0     0     <1       Titanium     ppm     ASTM D5185m     >2     6     3     <1	-						
Titanium     ppm     ASTM D5185m     >2     6     3     <1       Silver     ppm     ASTM D5185m     >2     <1							<1
Silver     ppm     ASTM D5185m     >2     <1     <1     <1       Numinum     ppm     ASTM D5185m     >20     9     2     3       ead     ppm     ASTM D5185m     >20     0     0     <1	Fitanium		ASTM D5185m	>2	6	3	<1
Numinum     ppm     ASTM D5185m     >20     9     2     3       sead     ppm     ASTM D5185m     >20     0     0     <1					<1	<1	<1
ead     ppm     ASTM D5185m     >20     0     0     <1       Copper     ppm     ASTM D5185m     >125     0     <1							
Dopper     ppm     ASTM D5185m     >125     0     <1     2       Tin     ppm     ASTM D5185m     >4     0     <1					-		<1
Tin     ppm     ASTM D5185m     >4     0     <1     <1       Antimony     ppm     ASTM D5185m       0       Vanadium     ppm     ASTM D5185m     0     <1				>125		<1	
Antimony     ppm     ASTM D5185m       0       Anadium     ppm     ASTM D5185m     0     <1			ASTM D5185m	>4	0	<1	<1
Vanadium     ppm     ASTM D5185m     0     <1     0       Cadmium     ppm     ASTM D5185m     0     0     <1     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     2     5     40     10       Barium     ppm     ASTM D5185m     2     5     40     10       Barium     ppm     ASTM D5185m     0     0     0     0     0       Anganese     ppm     ASTM D5185m     50     666     54     58       Magnesium     ppm     ASTM D5185m     950     996     786     849       Calcium     ppm     ASTM D5185m     950     1062     936     999       Cinc     ppm     ASTM D5185m     950     1062     936     999       Cinc     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method <thimit base<="" th="">     current</thimit>	Antimony						
Deadmium     ppm     ASTM D5185m     0     <1     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     2     5     40     10       Barium     ppm     ASTM D5185m     0     0     0     0     0     0       Adaganese     ppm     ASTM D5185m     0     66     54     58       Maganese     ppm     ASTM D5185m     0     0     -<1     <1       Magnesium     ppm     ASTM D5185m     0     0     -<1     <1       Phosphorus     ppm     ASTM D5185m     950     996     786     849       Calcium     ppm     ASTM D5185m     950     1062     936     999       Calcium     ppm     ASTM D5185m     950     1062     936     999       Calcium     ppm     ASTM D5185m     2600     4476     26283     2472       CONTAMINANTS     method     limit/base			ASTM D5185m		0	<1	0
Boron     ppm     ASTM D5185m     2     5     40     10       Barium     ppm     ASTM D5185m     0     0     0     0     0       Malybdenum     ppm     ASTM D5185m     50     66     54     58       Manganese     ppm     ASTM D5185m     0     0     -1     <1	Cadmium		ASTM D5185m		0	<1	0
Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     50     66     54     58       Manganese     ppm     ASTM D5185m     0     0     -1     <1	ADDITIVES		method	limit/base	current	history1	history2
Barium     ppm     ASTM D5185m     0     0     0     0     0       Molybdenum     ppm     ASTM D5185m     50     66     54     58       Manganese     ppm     ASTM D5185m     0     0     <1	Boron	maa	ASTM D5185m	2	5	40	10
Molybdenum     ppm     ASTM D5185m     50     66     54     58       Manganese     ppm     ASTM D5185m     0     0     <1							
Manganese     ppm     ASTM D5185m     0     0     <1     <1       Magnesium     ppm     ASTM D5185m     950     996     786     849       Calcium     ppm     ASTM D5185m     950     996     786     849       Calcium     ppm     ASTM D5185m     1050     1360     1137     1201       Phosphorus     ppm     ASTM D5185m     995     1062     936     999       Zinc     ppm     ASTM D5185m     995     1062     936     2999       Sulfur     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7741 <t< td=""><td></td><td></td><td></td><td>50</td><td>66</td><td></td><td></td></t<>				50	66		
Magnesium     ppm     ASTM D5185m     950     996     786     849       Calcium     ppm     ASTM D5185m     1050     1360     1137     1201       Phosphorus     ppm     ASTM D5185m     995     1062     936     999       Zinc     ppm     ASTM D5185m     995     1062     936     999       Sulfur     ppm     ASTM D5185m     1180     1512     1137     1229       Sulfur     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     7     5     6       Sodium     ppm     ASTM D5185m     >20     0     1     4       Netassium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7624 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
Definition     ppm     ASTM D5185m     1050     1360     1137     1201       Phosphorus     ppm     ASTM D5185m     995     1062     936     999       Zinc     ppm     ASTM D5185m     995     1062     936     999       Sulfur     ppm     ASTM D5185m     1180     1512     1137     1229       Sulfur     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method     limit/base     current     history1     history2       Solicon     ppm     ASTM D5185m     >25     7     5     6       Solicon     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7624     >20     13.5     6.2     12.5       Soulfation     Abs/.1mm     *ASTM D7415	•		ASTM D5185m	950	996	786	849
Phosphorus     ppm     ASTM D5185m     995     1062     936     999       Zinc     ppm     ASTM D5185m     1180     1512     1137     1229       Sulfur     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method     limit/base     current     history1     history2       Solicon     ppm     ASTM D5185m     >25     7     5     6       Sodium     ppm     ASTM D5185m     >25     7     5     6       Sodium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7844     >30     26.2     18.4     23.1       FLUID DEGRADATION     Method     limit/base     c	•						
Ppm     ASTM D5185m     1180     1512     1137     1229       Sulfur     ppm     ASTM D5185m     2600     4476     2628     2472       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     7     5     6       Sodium     ppm     ASTM D5185m     >20     0     <1     2       Potassium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7624     >20     13.5     6.2     12.5       Soulfation     Abs/cm     *ASTM D7624     >20     13.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     23.9	Phosphorus		ASTM D5185m	995	1062	936	999
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25756SodiumppmASTM D5185m>200<1	Zinc		ASTM D5185m	1180	1512	1137	1229
Silicon     ppm     ASTM D5185m     >25     7     5     6       Sodium     ppm     ASTM D5185m     >20     0     <1     2       Potassium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Soot %     %     *ASTM D7624     >20     13.5     6.2     12.5       Soulfation     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Soulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	Sulfur		ASTM D5185m			2628	2472
Sodium     ppm     ASTM D5185m     0     <1     2       Potassium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Nitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	CONTAMINAN	ΓS	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     0     1     4       INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Nitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	Silicon	ppm	ASTM D5185m	>25	7	5	6
INFRA-RED     method     limit/base     current     history1     history2       Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Nitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Soulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Dxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	Sodium	ppm	ASTM D5185m		0	<1	2
Soot %     %     *ASTM D7844     >6     1.2     0.2     1.2       Vitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Dxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	Potassium	ppm	ASTM D5185m	>20	0	1	4
Nitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	INFRA-RED		method	limit/base	current	history1	history2
Nitration     Abs/cm     *ASTM D7624     >20     13.5     6.2     12.5       Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Dxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6	Soot %	%	*ASTM D7844	>6	1.2	0.2	1.2
Sulfation     Abs/.1mm     *ASTM D7415     >30     26.2     18.4     23.1       FLUID DEGRADATION     method     limit/base     current     history1     history2       Dxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6							
Dxidation     Abs/.1mm     *ASTM D7414     >25     23.9     13     18.6							
Oxidation Abs/.1mm *ASTM D7414 >25 23.9 13 18.6	FLUID DEGRAD	ATION	method	limit/base	current	history1	history2
					0.0	0.1	



# **OIL ANALYSIS REPORT**





				VISUAL		method	limit/base	e current	history1	history2
Annen annen				White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
			1	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
Aug30/17 May11/18 Oct10/20	Mar4/21	Jun14/21	Feb15/22 Aug11/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Aug May Oct	Z	Jur	Feb	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
)°C				Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
				Free Water	scalar	*Visual		NEG	NEG	NEG
				FLUID PROPE	RTIES	method	limit/base	e current	history1	history2
				Visc @ 100°C	cSt	ASTM D445	12.00	11.6	11.6	11.5
	$\searrow$			GRAPHS						
				Iron (ppm)				Lead (ppm)		
8	21	21-		250 Severe				50 40 Severe		
Aug30/17 May11/18 Oct10/20	Mar4/21	Jun14/21	Feb15/22 m							
A N O		7	4 maa	150 Abnormal 100 -				30 20 - Abnormal	· · · · · · ·	
				50-			1	10-		
										3
				Aug4/16 Dec12/16 Apr3/17 Aug30/17	May11/18 - Oct10/20 -	Mar4/21 Jun14/21	Aug11/23	Aug4/16 - Dec12/16 - Apr3/17 -	Aug30/17 May11/18 Oct10/20 Mar4/21	Jun14/21 Feb15/22 Aug11/23
				Aluminum (ppm)	M D	E	A	Chromium (pp	_	L R A
				40 T				25 T	1 1 1 1 1 1 1 1 1 1	
				30 - Severe				20 - Severe		
				E 20 Abnormal				15- 10- Abnormal		
				10						
				0				5		
				Aug4/16 - Dec12/16 - Apr3/17 - Aug30/17 -	May11/18 . Oct10/20 .	Mar4/21. Jun14/21. Feb15/22.	Aug11/23 -	Aug4/16 - Dec12/16 - Apr3/17 -	May11/18 - May11/18 - Oct10/20 - Mar4/21 -	Jun 14/21. Feb 15/22 ·
				Aug Ang Aug	May' Oct	Jun Febi	Aug	Aug Deci	Aug. May <sup>j</sup> Oct <sup>i</sup> Ma	Jun Febi Augi
				Copper (ppm)				Silicon (ppm)		
				250 Severe				50 Severe		
			-	200-				40 -		
			udd	150 Abnormal				30 Abnormal		
				50-				10		
					20	21	23		20	22+
				Aug4/16 - Dec12/16 - Apr3/17 - Aug30/17 -	May11/18 Oct10/20	Mar4/21 Jun14/21 Feb15/22	Aug11/23	Aug4/16 - Dec12/16 - Apr3/17 -	Aug30/17 May11/18 0ct10/20 Marf./21	Jun 14/21. Feb 15/22 Aug 11/23
				Viscosity @ 100°(			A	Base Number	a, ≥ 0	, I A
				<sup>16</sup>				2.0		
			ć	14 Abnormal			g KOH	0.0		
			0000	Base Base			ber (m	6.0		
			ć	3 10 - Abnormal		$\checkmark$	Z	4.0		
				8				0.0		
				Aug4/16 Dec12/16 Apr3/17 Aug30/17	May11/18 Oct10/20	Mar4/21 Jun14/21 Feb15/22	Aug 11/23	Aug4/16 - Dec12/16 - Apr3/17 -	Aug30/17 May11/18 0ct10/20 Mar4/21	Jun14/21 Feb15/22 Aug11/23
				Aı Aıg	Man	Jun P	Auç	Al Der	M May	Jui Fet
1	I	_abora	tory	: WearCheck USA -	501 Madi	son Ave., Ca	ry, NC 275	13 <b>M</b> II	LLER TRUCK L	EASING #118
ANA	R	Sample	No.	: PCA0102875	Received	dd : 21.	Aug 2023		2196 BEI	NNETT ROAD
A C C R E D I T I		Lab Nu	mber Number		Diagnos Diagnos		Aug 2023 s Davis		PHILA	US 19116
Certificate L23	-	•	number	: MOB 1 (Additional			3 Davis		Contact: F	ROSTY VITER
To discus	s this s	ample	report, c	contact Customer Serv	vice at 1-8	300-237-136			rviter@millertr	ansgroup.com
				re outside of the ISO 1				(ICCM 106-0010)		(215)552-9832
Slatement	5 01 001	nonnity	to speci	ifications are based on t	ne simple	acceptance		= (JUGIVI 100.2012)	г:(	(215)552-9892

Ei

Contact/Location: ROSTY VITER - MILPHINE