

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### PETRO CANADA DURON SHP 15W40 (--- 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.

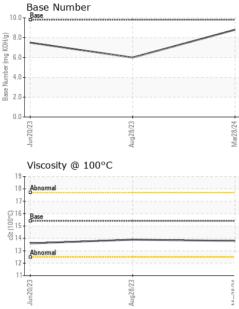
#### Fluid Condition

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

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0103567	GFL0085334	GFL0085358	
Sample Date		Client Info		28 Mar 2024	28 Aug 2023	20 Jun 2023	
Machine Age	hrs	Client Info		9188	8400	8400	
Oil Age	hrs	Client Info		8400	8400	678	
Oil Changed		Client Info		Changed	Changed	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>3.0	<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	>120	2	13	9	
Chromium	ppm	ASTM D5185m	>20	0	<1	<1	
Nickel	ppm	ASTM D5185m	>5	0	0	0	
Titanium	ppm	ASTM D5185m	>2	0	0	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>20	1	0	1	
Lead	ppm	ASTM D5185m	>40	0	0	<1	
Copper	ppm	ASTM D5185m	>330	<1	2	1	
Tin	ppm	ASTM D5185m	>15	0	0	<1	
Vanadium	ppm	ASTM D5185m		<1	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	ASTM D5185m	limit/base 0		history1 0	history2 1	
Boron Barium	ppm ppm	ASTM D5185m		current			
Boron		ASTM D5185m	0	current 1	0	1	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	current 1 0	0 0 59 <1	1 0	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current 1 0 57	0 0 59 <1 973	1 0 57 <1 905	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	current           1           0           57           0           960           1080	0 0 59 <1 973 1068	1 0 57 <1 905 1027	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current           1           0           57           0           960           1080           997	0 0 59 <1 973 1068 987	1 0 57 <1 905 1027 937	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current           1           0           57           0           960           1080           997           1238	0 0 59 <1 973 1068 987 1275	1 0 57 <1 905 1027 937 1181	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	current           1           0           57           0           960           1080           997	0 0 59 <1 973 1068 987	1 0 57 <1 905 1027 937	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current 1 0 57 0 960 1080 997 1238 3554 current	0 0 59 <1 973 1068 987 1275	1 0 57 <1 905 1027 937 1181	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current           1           0           57           0           960           1080           997           1238           3554           current           2	0 0 59 <1 973 1068 987 1275 3309 history1 4	1 0 57 <1 905 1027 937 1181 2901 history2 4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         2	0 0 59 <1 973 1068 987 1275 3309 history1 4 6	1 0 57 <1 905 1027 937 1181 2901 history2 4 5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Jimit/base</b> >25	current           1           0           57           0           960           1080           997           1238           3554           current           2	0 0 59 <1 973 1068 987 1275 3309 history1 4	1 0 57 <1 905 1027 937 1181 2901 history2 4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b>	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         2	0 0 59 <1 973 1068 987 1275 3309 history1 4 6	1 0 57 <1 905 1027 937 1181 2901 history2 4 5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Jimit/base</b> >25	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         0         current         0         0         current         0.1	0 0 59 <1 973 1068 987 1275 3309 history1 4 6 0 0 history1 0.4	1 0 57 <1 905 1027 937 1181 2901 history2 4 5 2 history2 0.6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         0         0         current	0 0 59 <1 973 1068 987 1275 3309 history1 4 6 0 0 history1	1 0 57 <1 905 1027 937 1181 2901 history2 4 5 2 2 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         0         current         0         0         current         0.1	0 0 59 <1 973 1068 987 1275 3309 history1 4 6 0 0 history1 0.4	1 0 57 <1 905 1027 937 1181 2901 history2 4 5 2 history2 0.6	
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1imit/base >22 20	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         0         0         current         0         current         0.1         5.3	0 0 59 <1 973 1068 987 1275 3309 history1 4 6 0 0 history1 0.4 9.4	1 0 57 <1 905 1027 937 1181 2901 history2 4 5 2 4 5 2 2 history2 0.6 8.7	
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >20 <b>imit/base</b> >20	current         1         0         57         0         960         1080         997         1238         3554         current         2         2         0         current         0.1         5.3         17.7	0 0 59 <1 973 1068 987 1275 3309 history1 4 6 0 0 history1 0.4 9.4 23.2	1 0 57 <1 905 1027 937 1181 2901 <b>history2</b> 4 5 2 <b>history2</b> 0.6 8.7 22.9	



# **OIL ANALYSIS REPORT**



	VISUAL White Metal	scalar	method *Visual	limit/base	current	history1 NONE	history2 NONE
	Yellow Metal		*Visual	NONE	NONE	NONE	NONE
		scalar					
	Precipitate	scalar	*Visual	NONE NONE	NONE NONE	NONE	NONE
	Silt	scalar	*Visual			NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
54	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Aug28/23 Mar28/24	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Au	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	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.9	13.6
	GRAPHS						
	Ferrous Alloys						
	14						
Aug28/23	12 - chromium						
Aug	10						
	8- Ed.						
	6						
	4-		· · · · · · · · · · · · · · · · · · ·				
	2						
	un 20/23	8/23		8/24			
	Jun2	Aug28/23		Mar28/24			
	Non-ferrous Metals	s					
	<sup>10</sup> I						
	copper 8						
	energy tin						
	6						
	udd						
	4 - 1						
	2						
	Contraction Contraction Contraction			_			
	3	23		24			
	un 20/23	Aug28/23		Mar28/24			
	⊣ Viscosity @ 100°C			2			
	<sup>19</sup> T			10	Base Number		
	18 - Abnormal			10.			
	17			(B)	0		
	© <sup>16</sup> -Base			KOH			
	016 Base 115 314			E 0.			
	<sup>3</sup> 14-			9. 9. 8ase Number (mg KOH/g) 7.	0		
	13 - Abnormal			ase g	0		
	12-			Ζ.			
	11	~				m	
	Jun 20/23	Aug28/23		Mar28/24	Jun20/23	Aug28/23	Mar28/24
	n L	M		Ma	Ju	Aui	Ma
Laboratory	: WearCheck USA - 501	1 Madiso			GFL Envir	onmental - 958A -	Chillicothe Wigand
	: GFL0103567	Recei	ived : 02	2 Apr 2024			N. State Rd 29
ANAB Sample No.			d .03	A			
Lab Number		Teste		Apr 2024	las De de		Chillicothe, IL
Lab Number Unique Number	: 10956253	Teste Diagr		Apr 2024 - W	Ves Davis	0	US 61523
Certificate L2367 Lab Number Test Package	: 10956253 : FLEET	Diagr	nosed : 03	Apr 2024 - W	Ves Davis		US 61523 tact: Bryan Link
Lab Number Unique Number	: 10956253 : FLEET , contact Customer Servi	Diagr	nosed : 03 800-237-1369	Apr 2024 - W 9.	Ves Davis		US 61523

Submitted By: DREW MOOBERRY