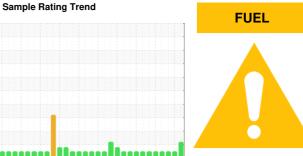


OIL ANALYSIS REPORT

San





Machine Id
701021
Component
Diesel Engine
Fluid

PETRO CANADA DURON SHP 15W40 (22 LTR)

DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

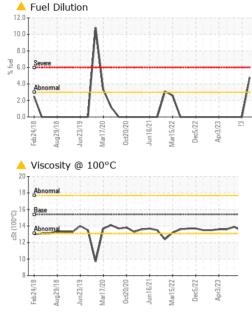
Fluid Condition

Fuel is present in the oil and is lowering the viscosity. The oil is no longer serviceable due to the presence of contaminants.

		N SHP 15W40 (22 LTR)									
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2					
Sample Number		Client Info		GFL0088937	GFL0088923	GFL0074294					
Sample Date		Client Info		16 Aug 2023	24 Jul 2023	09 Jun 2023					
Machine Age	hrs	Client Info		17529	17343	16161					
Dil Age	hrs	Client Info		186	572	610					
Oil Changed		Client Info		Changed	Changed	Changed					
Sample Status				ABNORMAL	NORMAL	NORMAL					
CONTAMINAT	ION	method	limit/base	current	history1	history2					
Glycol		WC Method		NEG	NEG	NEG					
WEAR METAL	S	method	limit/base	current	history1	history2					
ron	ppm	ASTM D5185(m)	>75	8	23	24					
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1					
lickel	ppm	ASTM D5185(m)	>4	0	<1	<1					
ītanium	ppm	ASTM D5185(m)	>2	<1	<1	<1					
Silver	ppm	ASTM D5185(m)	>2	0	0	0					
Aluminum	ppm	ASTM D5185(m)	>15	10	18	7					
ead	ppm	ASTM D5185(m)	>25	0	0	0					
Copper	ppm	ASTM D5185(m)	>100	<1	1	1					
īn	ppm	ASTM D5185(m)	>4	0	0	0					
Antimony	ppm	ASTM D5185(m)		0	<1	<1					
/anadium	ppm	ASTM D5185(m)		0	0	0					
Beryllium	ppm	ASTM D5185(m)		0	0	0					
Cadmium	ppm	ASTM D5185(m)		0	0	0					
ADDITIVES		method	limit/base	current	history1	history2					
Boron	ppm	ASTM D5185(m)	0	5	3	4					
	ppm ppm	ASTM D5185(m) ASTM D5185(m)	0	5 0	3	4 0					
Barium		. ,			0 57	0 61					
Barium Molybdenum Manganese	ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	0 55 <1	0 57 <1	0 61 <1					
Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 60	0 55 <1 906	0 57 <1 926	0 61 <1 900					
Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 60 0	0 55 <1 906 992	0 57 <1	0 61 <1					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 60 0 1010 1070 1150	0 55 <1 906 992 1014	0 57 <1 926 998 1010	0 61 <1 900 1018 997					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270	0 55 <1 906 992 1014 1117	0 57 <1 926 998 1010 1136	0 61 <1 900 1018 997 1117					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495	0 57 <1 926 998 1010 1136 2395	0 61 <1 900 1018 997 1117 2262					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117	0 57 <1 926 998 1010 1136	0 61 <1 900 1018 997 1117					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495	0 57 <1 926 998 1010 1136 2395	0 61 <1 900 1018 997 1117 2262					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495	0 57 <1 926 998 1010 1136 2395 <1	0 61 <1 900 1018 997 1117 2262 <1					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495 <1	0 57 <1 926 998 1010 1136 2395 <1	0 61 <1 900 1018 997 1117 2262 <1 history2					
Barium Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Godium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495 <1 current	0 57 <1 926 998 1010 1136 2395 <1 history1	0 61 <1 900 1018 997 1117 2262 <1 history2					
Barium Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495 <1 current 3	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7	0 61 <1 900 1018 997 1117 2262 <1 history2 4					
Barium Molybdenum Manganese Magnesium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060	0 55 <1 906 992 1014 1117 2495 <1 current 3 4 19	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7 35	0 61 <1 900 1018 997 1117 2262 <1 history2 4 7					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Kinc Sulfur Lithium CONTAMINAN Silicon Godium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	0 55 <1 906 992 1014 1117 2495 <1 current 3 4 19 4.8	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7 35 <1.0	0 61 <1 900 1018 997 1117 2262 <1 history2 4 7 10 <1.0					
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Goot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0	0 55 <1 906 992 1014 1117 2495 <1 current 3 4 19 ▲ 4.8 current	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7 35 <1.0 history1	0 61 <1 900 1018 997 1117 2262 <1 history2 4 7 10 <1.0					
Barium Molybdenum Manganese Magnesium Phosphorus Zinc Gulfur Lithium CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593*	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6	0 55 <1 906 992 1014 1117 2495 <1 current 3 4 19 ▲ 4.8 current 0.1	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7 35 <1.0 history1 0.5	0 61 <1 900 1018 997 1117 2262 <1 history2 4 7 10 <1.0 history2 0.4					
CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7593* method ASTM D7593* method ASTM D7844* ASTM D7624* ASTM D7624*	0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >3.0 limit/base >6 >20	0 55 <1 906 992 1014 1117 2495 <1 current 3 4 19 ▲ 4.8 current 0.1 7.4	0 57 <1 926 998 1010 1136 2395 <1 history1 6 7 35 <1.0 history1 0.5 10.3	0 61 <1 900 1018 997 1117 2262 <1 history2 4 7 10 <1.0 history2 0.4 9.5					



OIL ANALYSIS REPORT



	VISUAL		method	limit/	base	curre	ent	his	story	1		histo	ry2
	Emulsified Water	scalar	Visual*	>0.2		NEG		NEG			NEG		
	Free Water	scalar	Visual*			NEG		NEG			NEG		
1	FLUID PROPE	RTIES	method limit/ba			curre	urrent history			/1 history2			
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	4	13.0		13.4	1		13	3.9	
-	GRAPHS						,						
1	Iron (ppm)	7-53-53-5	315315315315	35135	60	Lead (p	pm)				3753		
	20 - Severe				50	Severe							
	00 - Abnormal				40								
Ε.	60-				틆30	Abnormal		1-1-1-1					
	40 \	~ /	~^		20 10								
	20 0		· V		0	\							
	Feb24/18 Aug29/18 Jun23/19 Mar17/20	Jun16/21	Mar15/22 Dec5/22 Apr3/23	Jul24/23		Feb24/18 Aug29/18	Jun23/19 Mar17/20	Oct20/20	Jun16/21	Mar15/22	Dec5/22	Apr3/23	Jul24/23
	# ₹ ₹ ≥ ° Aluminum (ppm)	0 5	Σ	7		≝ ₹ Chromiu			5	Σ			7
	30			12	I		Ú						
	25 Severe				10	Severe				•••••			
mdd	20 Abnormal			Λ	mdd 6								
	10			/\	4	Abnormal							
	5		1	/	2								
	0 81 18 0 20 20	217/	22 - 23 - 23 - 23 - 23 - 23 - 23 - 23 -	23	0		79 J	20-	12/	72	22	Z3 Z	23
	Feb24/18 Aug29/18 Jun23/19 Mar17/20	Jun 16/21	Mar15/22 Dec5/22 Apr3/23	Jul24/23		Feb24/18 Aug29/18	Jun23/19 Mar17/20	0ct20/20	Jun16/21	Mar15/22	Dec5/22	Apr3/23	Jul24/23
4	Copper (ppm)				60	Silicon (ppm)						
	50-1				50	Severe							
	00				40								
Wdd 2	00 Severe				표 30	Abnormal	u.u.i					-	
	Abnormal		<u> </u>		20	1							
	50-				10	h						~	$\overline{}$
	Feb24/18 Aug29/18 Jun23/19	Uct2U/2U -	Mar15/22 Dec5/22 Apr3/23	Jul24/23	0	Feb24/18 -	Jun23/19	0ct20/20	16/21	15/22	Dec5/22 -	Apr3/23	Jul24/23
			Mari Dev	Juc				Oct	Junl	Mari	Del	Ap	Juc
	▲ Viscosity @ 100°C		7-1-1-1-1-1-1	anțan	12.0	Fuel Dilu	ition				7-17		7-17-
	18 - Abnormal		<u> </u>		10.0		1						
().c)	16 - Base				8.0		Α						
cSt (100°C)	Abnormal Abnormal	~		\	9.0 sp	Severe	- 11						-
	10				4.0	Abnormal	- \			N			+
	8				0.0			_		Λ			1
	Feb24/18 Aug29/18 Jun23/19 Mar17/20	Jun16/21	Mar15/22 Dec5/22 Apr3/23	Jul24/23		Feb24/18 Aug29/18	Jun23/19 Mar17/20	Oct20/20	Jun16/21	Mar15/22	Dec5/22	Apr3/23	Jul24/23
	Au Au Au	0 1	Σ 1	2		Fe Au	∃ ≅	ŏ	7	Š		-4	7



CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number : 5629450

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

: GFL0088937 : 02576390

Received Diagnosed

: 18 Aug 2023 Diagnostician : Wes Davis

: 17 Aug 2023

Test Package : MOB 1 (Additional Tests: FuelDilution, PercentFuel)

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

GFL Environmental - 216 15 Bermondsey Road Toronto, ON CA M4B 0A6 Contact: Tom Hatzioannidis thatzioannidis@gflenv.com T: (416)678-9340