

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

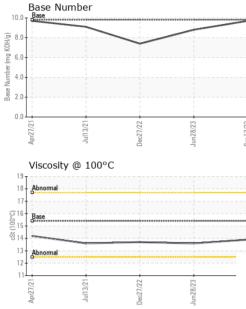
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0092931	GFL0015804	GFL0067622
Sample Date		Client Info		12 Sep 2023	28 Jun 2023	27 Dec 2022
Machine Age	hrs	Client Info		17120	16955	600
Oil Age	hrs	Client Info		16955	600	600
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	22	12	16
Chromium	ppm	ASTM D5185m	>20	1	2	<1
Nickel	ppm	ASTM D5185m	>4	<1	1	0
Titanium	ppm	ASTM D5185m		<1	2	0
Silver	ppm	ASTM D5185m	>3	0	2	0
Aluminum	ppm	ASTM D5185m	>20	6	3	1
Lead	ppm	ASTM D5185m	>40	1	6	2
Copper	ppm	ASTM D5185m	>330	2	3	11
Tin	ppm	ASTM D5185m	>15	2	2	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		0	1	0
Cadmium	ppm	ASTM D5185m		<1	2	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current <1	history1 4	history2 84
	ppm ppm	ASTM D5185m			· · · · · ·	
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1	4 0 61	84
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	<1 44 57 1	4 0 61 2	84 0 67 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 44 57 1 889	4 0 61 2 1012	84 0 67 <1 956
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 44 57 1 889 958	4 0 61 2 1012 1192	84 0 67 <1 956 1197
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	<1 44 57 1 889 958 945	4 0 61 2 1012 1192 1051	84 0 67 <1 956 1197 1036
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	<1 44 57 1 889 958 945 1154	4 0 61 2 1012 1192 1051 1319	84 0 67 <1 956 1197 1036 1285
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	<1 44 57 1 889 958 945	4 0 61 2 1012 1192 1051	84 0 67 <1 956 1197 1036
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	<1 44 57 1 889 958 945 1154	4 0 61 2 1012 1192 1051 1319	84 0 67 <1 956 1197 1036 1285 3195 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060	<1 44 57 1 889 958 945 1154 3247 current 16	4 0 61 2 1012 1192 1051 1319 3702 history1 5	84 0 67 <1 956 1197 1036 1285 3195 history2 13
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 60 1010 1070 1150 1270 2060 limit/base	<1 44 57 1 889 958 945 1154 3247 current 16 3	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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 method	0 0 60 1010 1070 1150 1270 2060 limit/base	<1 44 57 1 889 958 945 1154 3247 current 16	4 0 61 2 1012 1192 1051 1319 3702 history1 5	84 0 67 <1 956 1197 1036 1285 3195 history2 13
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	0 0 60 1010 1070 1150 1270 2060 limit/base	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 3	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >20	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 3 current 0.3	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5 5 5 5 5 history1 0.4	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 1 history2 0.7
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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 current 0.3 8.9	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5 5 5 5 5 5 history1 0.4 8.2	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 1 history2 0.7 9.8
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >20	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 . current 0.3	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5 5 5 5 5 history1 0.4	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 1 history2 0.7
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 <i>limit/base</i> >25 >20 <i>limit/base</i> >3 >20	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 current 0.3 8.9	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5 5 5 5 5 5 history1 0.4 8.2	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 1 history2 0.7 9.8
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 2060 225 20 225 20 imit/base >3 20 23	<1 44 57 1 889 958 945 1154 3247 current 16 3 3 3 current 0.3 8.9 17.8	4 0 61 2 1012 1012 1051 1319 3702 history1 5 5 5 5 history1 0.4 8.2 20.5	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 1 history2 0.7 9.8 21.8
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 imit/base >3 >20	<1 44 57 1 889 958 945 1154 3247 Current 16 3 3 Current 0.3 8.9 17.8 Current	4 0 61 2 1012 1192 1051 1319 3702 history1 5 5 5 5 5 history1 0.4 8.2 20.5 history1	84 0 67 <1 956 1197 1036 1285 3195 history2 13 4 1 history2 0.7 9.8 21.8 history2



OIL ANALYSIS REPORT

VISUAL



		VISUAL		method	limit/base	current	history1	history
		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
/22	1/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Dec27/22	Jun 28/23 Sep 12/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
		FLUID PROPE		method	limit/base	current	history1	history
		Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.6	13.7
		GRAPHS						
		Ferrous Alloys						
22	23	iron						
Dec27/22	Jun28/23	20 - nickel		1				
ā	٦ ٦	15	~					
		15 E	-	\checkmark				
		10						
		5						
		0	Concerning and the State State State	ARABARAN DE CONTRACTOR DE C	States and the second sec			
			/22	/23	/23			
		Apr27/21 Jul13/21	Dec27/22	Jun 28/23	Sep 12/23			
		Non-ferrous Metal		7	0			
			5					
		copper						
		25 - management lead						
		20						
		<u>ة</u> 15						
		10	~					
		5		- and -				
			And in the Designation of the De					
		2 2	/22	2	2			
		Apr27/21)ec27/22	un28/2:	kep 1 2/23			
			Dec27/22	Jun28/23	Sep12/23			
		0 12/22/0 Viscosity @ 100°C		Jun28/2		Base Number		
		Viscosity @ 100°C		Jun28/2	2021 das			
		Viscosity @ 100°C		Jun28/2	10.	Base		
		Viscosity @ 100°C		Jun28/2/	10.	Base		
		Viscosity @ 100°C		Jun28/2/	10.	0 - Base		
		Viscosity @ 100°C		2/82muC	10.	0 - Base		
		Viscosity @ 100°C		2/82mr	10.	0 - Base		
		Viscosity @ 100°C		2/82mr	10. (6)HOX 60. uu) Jaquuny, ase	0 - Base 0		
		Viscosity @ 100°C		2/82mL	10.	0 - Base 0		
		Viscosity @ 100°C			10. (0) (0) (0) (0) (0) (0) (0) (0)	0		~
		Viscosity @ 100°C			10. (0) (0) (0) (0) (0) (0) (0) (0)	0		2823
		Viscosity @ 100°C			10. (0) (0) (0) (0) (0) (0) (0) (0)	0	23/22	-52/82
NAR	Laboratory Sample No.	Viscosity @ 100°C	coll Madia Received	son Ave., Ca	10. 10. 10. 10. 10. 10. 10. 10.	Apr2/2/21		I. Western
	Laboratory Sample No. Lab Number	Viscosity @ 100°C	501 Madia Received	son Ave., Ca 1 : 15 : ed : 18 :	10. 10. 10. 10. 10. 10. 10. 10.	Apr2/2/21	r ironmental - 46 501 N	3 - Cheboy J. Western Cheboygan
	Laboratory Sample No.	Viscosity @ 100°C	coll Madia Received	son Ave., Ca 1 : 15 : ed : 18 :	10. 10. 10. 10. 10. 10. 10. 10.	Apr2/2/21	r ironmental - 46 501 N (

* - 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)

F:

T: (231)597-8553