

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Component Diesel Engine Fluid

### PETRO CANADA DURON SHP 15W40 (--- GAL)

Recommendation	
necommentation	

Resample at the next service interval to monitor.

Machine Id

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

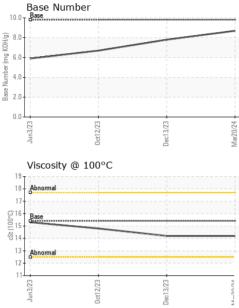
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0108760	GFL0105637	GFL0089140
Sample Date		Client Info		20 Mar 2024	13 Dec 2023	12 Oct 2023
Machine Age	hrs	Client Info		4657	4657	4537
Oil Age	hrs	Client Info		4537	0	2400
Oil Changed		Client Info		N/A	Not Changd	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	>90	8	14	29
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	2	4
Lead	ppm	ASTM D5185m	>40	0	<1	1
Copper	ppm	ASTM D5185m	>330	2	<1	2
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		•	0	0
oddinidini	ppm	AOTIVI DOTIOSIII		0	0	0
ADDITIVES	ppin	method	limit/base	current	history1	history2
	ppm		limit/base			
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current <1	history1 <1	history2 2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current <1 0	history1 <1 0	history2 2 <1
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 0 60	history1 <1 0 57	history2 2 <1 63
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current <1 0 60 0	history1 <1 0 57 0	history2 2 <1 63 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current <1 0 60 0 971	history1 <1 0 57 0 1043	history2 2 <1 63 0 951
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current <1 0 60 0 971 1104	history1 <1 0 57 0 1043 1181	history2 2 <1 63 0 951 1092
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	0 0 60 0 1010 1070 1150	Current <1 0 60 0 971 1104 1028	history1 <1 0 57 0 1043 1181 1114	history2 2 <1 63 0 951 1092 1042
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method 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           60           0           971           1104           1028           1283	history1           <1           0           57           0           1043           1181           1114           1280	history2           2           <1           63           0           951           1092           1042           1289
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current <1 0 60 0 971 1104 1028 1283 3027	<1         0         57         0         1043         1181         1114         1280         3037	history2           2           <1           63           0           951           1092           1042           1289           3033
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current <1 0 60 0 971 1104 1028 1283 3027 current	history1         <1         0         57         0         1043         1181         1114         1280         3037         history1	history2         2         <1         63         0         951         1092         1042         1289         3033         history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current           <1           0           60           0           971           1104           1028           1283           3027           current           5	<1         0         57         0         1043         1181         1114         1280         3037         history1         4	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5
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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	current         <1         0         60         0         971         1104         1028         1283         3027         current         5         2	<1         0         57         0         1043         1181         1114         1280         3037         history1         4         4	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7
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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	<1         0         60         0         971         1104         1028         1283         3027         current         5         2         2	kistory1         <1         0         57         0         1043         1181         1114         1280         3037         history1         4         1	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7         3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm	method           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	<1         0         60         0         971         1104         1028         1283         3027         current         5         2         2         2         current	history1         <1         0         57         0         1043         1181         1114         1280         3037         history1         4         1         1         1         history1	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7         3         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 <b>TS</b> ppm ppm	method         ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 >20 <b>imit/base</b> >20	current         <1         0         60         0         971         1104         1028         1283         3027         current         5         2         2         current         0.2	history1         <1         0         57         0         1043         1181         1114         1280         3037         history1         4         1         1         history1         0.6	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7         3         history2         1
ADDITIVES 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	method           ASTM D5185m           ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 1000 225 220 20 20 20 20 20 20 20 20 20 20 20	current         <1         0         60         0         971         1104         1028         1283         3027         current         5         2         current         0.2         6.4	history1         <1         0         57         0         1043         1181         1114         1280         3037         history1         4         1         history1         0         0.6         9.2	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7         3         history2         1         1.1.4
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	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 <u>imit/base</u> >20 20 20	<1         0         60         0         971         1104         1028         1283         3027         current         5         2         current         0.2         6.4         18.5	<1         0         57         0         1043         1181         1114         1280         3037         history1         4         1         0.6         9.2         20.3	history2         2         <1         63         0         951         1092         1042         1289         3033         history2         5         7         3         history2         1         11.4         24.0



# **OIL ANALYSIS REPORT**

VISUAL



White Metal Yellow Metal Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar ***	Visual I Visual I Visual I Visual I Visual I Visual I Visual 2 Visual 2 Method I STM D445	NONE NONE NONE NONE NONE NONE NONE NORML NORML >0.2	NONE NONE NONE NONE NOR NOR NOR NOR NEG Current 14.2	NONE NONE NONE NONE NONE NONE NORML NORML NEG NEG 14.2	NONE NONE NONE NONE NORML NORML NEG NEG 14.8
Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** Scalar ***	Visual I Visual I Visual I Visual I Visual I Visual Visual Visual I Method I STM D445	NONE NONE NONE NORML NORML >0.2 limit/base 15.4	NONE NONE NONE NORML NORML NEG NEG Current	NONE NONE NONE NORML NORML NEG NEG history1	NONE NONE NONE NORML NORML NEG NEG history2
Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** scalar *** Scalar *** Scalar ***	Visual I Visual I Visual I Visual I Visual I Visual Visual Method ISTM D445	NONE NONE NORML NORML >0.2 limit/base 15.4	NONE NONE NORML NORML NEG NEG Current	NONE NONE NORML NORML NEG NEG history1	NONE NONE NORML NORML NEG NEG history2
Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *1 scalar *1 scalar *1 scalar *1 scalar *1 scalar *1 RTIES cSt A	Visual I Visual I Visual I Visual 2 Visual 2 Visual 3 Method 3 STM D445 1	NONE NONE NORML NORML >0.2 limit/base 15.4	NONE NONE NORML NORML NEG NEG Current	NONE NORML NORML NEG NEG history1	NONE NORML NORML NEG NEG history2
Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *1 scalar *1 scalar *1 scalar *1 scalar *1 scalar *1 RTIES cSt A	Visual I Visual I Visual I Visual 2 Visual 2 Visual 3 Method 3 STM D445 1	NONE NORML NORML >0.2 limit/base 15.4	NONE NORML NORML NEG NEG current	NONE NORML NORML NEG NEG history1	NONE NORML NORML NEG NEG history2
Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *** scalar *** scalar *** scalar *** scalar *** RTIES cSt A	Visual I Visual I Visual I Visual Visual method STM D445	NONE NORML >0.2 limit/base 15.4	NONE NORML NORML NEG NEG current	NONE NORML NORML NEG NEG history1	NONE NORML NORML NEG NEG history2
Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *** scalar *** scalar *** scalar *** RTIES cSt A	Visual I Visual Visual Visual Visual Method STM D445	NORML NORML >0.2 limit/base 15.4	NORML NORML NEG NEG current	NORML NORML NEG NEG history1	NORML NORML NEG NEG history2
Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *1 scalar *1 scalar *1 RTIES cSt A	Visual N Visual Visual Method NSTM D445	NORML >0.2 15.4	NORML NEG NEG current	NORML NEG NEG history1	NORML NEG NEG history2
Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *1 scalar *1 FRTIES cSt A	Visual > Visual method \STM D445	>0.2 limit/base 15.4	NEG NEG current	NEG NEG history1	NEG NEG history2
Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	scalar *1	Visual method ISTM D445	limit/base 15.4	NEG current	NEG history1	NEG history2
FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	CSt A	method ISTM D445	limit/base 15.4	current	history1	history2
Visc @ 100°C GRAPHS Ferrous Alloys	cSt A	STM D445	15.4			
GRAPHS Ferrous Alloys	Dec1323			14.2	14.2	14.0
Ferrous Alloys			Maz20/24			
Non-ferrous Metal			Mar20/24 = /			
Solution of the second			Mar2024			
Non-ferrous Metal			Mar20/24			
Non-ferrous Metal			Mar20/24			
Non-ferrous Metal			Mar20/24			
Non-ferrous Metal			Ma2024			
Non-ferrous Metal			Mar2024			
Non-ferrous Metal			Mar20/24			
Non-ferrous Metal		27 (F	Ma20/24			
Non-ferrous Metal			Mar20/2			
Non-ferrous Metal		5	Ma			
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Juni	Dec13/23		Mar20/24			
Viscosity @ 100°C	2		B	ase Number		
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18 - Abnormal			8.0-			
- 16			KOH			
P 15			Ĕ 6.0			
53 14-						
13			ase			
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11			0.0			
13/23	3/23	C7/C		2/23	3/23	
Jun Oct1	Dec		Mar2	Oct1	Dec1	
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				Davis	Sterli	ng Heights, I US 483
	Diagnos	3CU . 24 IV	viai 2024 - Wes	Davis	Contact	: Frank Wola
						k@gflenv.co
l	atory : WearCheck USA - 50 le No. : GFL0108760 umber : 06126184 Number : 10940335	atory : WearCheck USA - 501 Madison le No. : GFL0108760 mber : 06126184 Number : 10940335 Diagnos	atory : WearCheck USA - 501 Madison Ave., Cary, le No. : GFL0108760 Received : 22 umber : 06126184 Tested : 24 Number : 10940335 Diagnosed : 24 N	atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 le No. : GFL0108760 Received : 22 Mar 2024 umber : 06126184 Tested : 24 Mar 2024 Number : 10940335 Diagnosed : 24 Mar 2024 - Wes	atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Envir le No. : GFL0108760 Received : 22 Mar 2024 umber : 06126184 Tested : 24 Mar 2024 Number : 10940335 Diagnosed : 24 Mar 2024 - Wes Davis ackage : FLEET	atory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 415 - le No. : GFL0108760 Received : 22 Mar 2024 C umber : 06126184 Tested : 24 Mar 2024 Sterlin Number : 10940335 Diagnosed : 24 Mar 2024 - Wes Davis ackage : FLEET Contact