

OIL ANALYSIS REPORT

Sa









427059-402050

Component

Diesel Engine

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

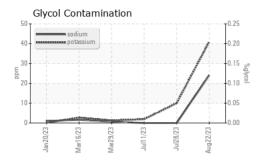
Fluid Condition

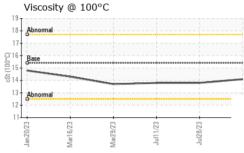
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

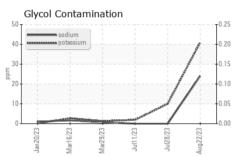
)N 3HP 13W40 (· · · · · · · · · · · · · · · · · · ·	Jan2023	Mar2023 Mar2023	Jul2023 Jul2023	Aug2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0090436	GFL0090422	GFL0086300
Sample Date		Client Info		22 Aug 2023	28 Jul 2023	11 Jul 2023
Machine Age	hrs	Client Info		32249	32089	31950
Oil Age	hrs	Client Info		299	139	31950
Oil Changed		Client Info		Not Changd	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
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	3	10	16
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	0
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m		3	2	4
Lead	ppm	ASTM D5185m	>40	<1	<1	1
Copper	ppm	ASTM D5185m	>330	2	50	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	18	<1	10
Barium	ppm	ASTM D5185m	0	0	0	0
Molybdenum		ASTM D5185m	60	78	62	61
	nnm		0.0	. •		
	ppm	ASTM D5185m	0	<1	<1	<1
Manganese	ppm	ASTM D5185m	1010	<1 940	<1 889	<1 849
Manganese Magnesium	ppm ppm	ASTM D5185m	1010	940	889	849
Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m	1010 1070	940 1125	889 1058	849 1028
Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150	940 1125 1068	889 1058 992	849 1028 966
Manganese Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m	1010 1070	940 1125	889 1058	849 1028
Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270	940 1125 1068 1323	889 1058 992 1175	849 1028 966 1162
Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060	940 1125 1068 1323 3881	889 1058 992 1175 2908	849 1028 966 1162 3186
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	1010 1070 1150 1270 2060	940 1125 1068 1323 3881 current	889 1058 992 1175 2908 history1	849 1028 966 1162 3186 history2
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 method	1010 1070 1150 1270 2060	940 1125 1068 1323 3881 current	889 1058 992 1175 2908 history1	849 1028 966 1162 3186 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	940 1125 1068 1323 3881 current 3	889 1058 992 1175 2908 history1 4	849 1028 966 1162 3186 history2 6
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	1010 1070 1150 1270 2060 limit/base >25	940 1125 1068 1323 3881 current 3 24	889 1058 992 1175 2908 history1 4 0 10 NEG	849 1028 966 1162 3186 history2 6 0 2 NEG
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D2982	1010 1070 1150 1270 2060 limit/base >25 >20	940 1125 1068 1323 3881 current 3 24 41 NEG	889 1058 992 1175 2908 history1 4 0 10 NEG	849 1028 966 1162 3186 history2 6 0 2 NEG
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D7844	1010 1070 1150 1270 2060 limit/base >25 >20	940 1125 1068 1323 3881 current 3 24 41 NEG current	889 1058 992 1175 2908 history1 4 0 10 NEG history1	849 1028 966 1162 3186 history2 6 0 2 NEG history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D7844 *ASTM D7844 *ASTM D7624	1010 1070 1150 1270 2060 limit/base >25 >20	940 1125 1068 1323 3881 current 3 24 41 NEG current 0.1 4.6	889 1058 992 1175 2908 history1 4 0 10 NEG history1 0.2 6.2	849 1028 966 1162 3186 history2 6 0 2 NEG history2 1.7 6.7
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 Method *ASTM D7844 *ASTM D7624 *ASTM D76145	1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	940 1125 1068 1323 3881	889 1058 992 1175 2908 history1 4 0 10 NEG history1 0.2 6.2 17.8	849 1028 966 1162 3186 history2 6 0 2 NEG history2 1.7 6.7 19.6
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D2982 Method *ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7415 Method	1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	940 1125 1068 1323 3881	889 1058 992 1175 2908 history1 4 0 10 NEG history1 0.2 6.2 17.8 history1	849 1028 966 1162 3186 history2 6 0 2 NEG history2 1.7 6.7 19.6 history2
Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 Method *ASTM D7844 *ASTM D7624 *ASTM D76145	1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	940 1125 1068 1323 3881	889 1058 992 1175 2908 history1 4 0 10 NEG history1 0.2 6.2 17.8	849 1028 966 1162 3186 history2 6 0 2 NEG history2 1.7 6.7 19.6



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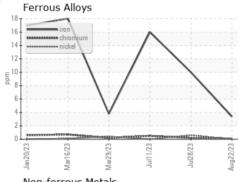


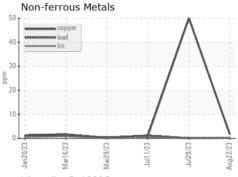


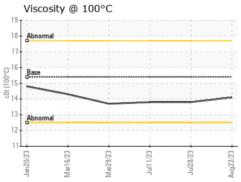
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

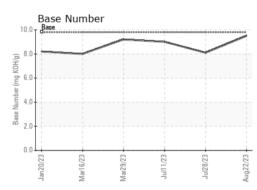
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	13.8	13.8	

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10620058 Test Package : FLEET (Additional Tests: Glycol)

: GFL0090436 : 05934787

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received Diagnosed

: 25 Aug 2023 : 29 Aug 2023

Diagnostician : Jonathan Hester

Contact: JONATHAN WILLIAMS jonathan.williams@gflenv.com

GFL Environmental - 868 - Childersburg Fines Hauling (Alpine)

T:

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - 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) 13737 Plant Rd

US 35044

F:

Childersburg, AL