

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 928035 Component

Diesel Engine Fluid

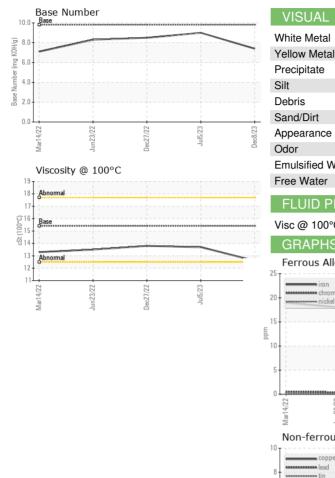
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS	SAMPLE INFOR	MATION	m
Recommendation	Sample Number		Clie
Resample at the next service interval to monitor.	Sample Date		Clie
Wear	Machine Age	hrs	Clie
All component wear rates are normal.	Oil Age	hrs	Clie
Contamination	Oil Changed		Clie
There is no indication of any contamination in the	Sample Status		
oil.	CONTAMINAT	ION	m
Fluid Condition			
The BN result indicates that there is suitable	Fuel		WC
alkalinity remaining in the oil. The condition of the	Water		WC
oil is suitable for further service.	Glycol		WC
	WEAR METALS		
	Iron	ppm	AST
	Chromium	ppm	AST
	Nickel	ppm	AST
	Titanium	ppm	AST
	Silver	ppm	AST
	Aluminum	ppm	AST
	Lead	ppm	AST
	Copper	ppm	AST
	Tin	ppm	AST
	Vanadium	ppm	AST
	Cadmium	ppm	AST
	ADDITIVES		m
	Boron	ppm	AST
	20.011	22	/ 10 1

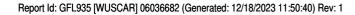
Sample Number		Client Info		GFL0092607	GFL0082501	GFL0062145
Sample Date		Client Info		08 Dec 2023	05 Jul 2023	27 Dec 2022
Machine Age	hrs	Client Info		35012	34548	34127
Oil Age	hrs	Client Info		464	620	486
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINAT	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	21	16	18
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	0	0
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	5	2	2
Lead	ppm	ASTM D5185m	>40	0	<1	<1
Copper	ppm	ASTM D5185m	>330	2	1	1
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES						
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	Method ASTM D5185m	limit/base	current	history1 2	history2 6
	ppm ppm					
Boron		ASTM D5185m	0	<1	2	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1 0	2 0	6 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 62	2 0 63	6 0 67
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 62 <1	2 0 63 <1	6 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 0 62 <1 979	2 0 63 <1 922	6 0 67 <1 994
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 0 62 <1 979 1038	2 0 63 <1 922 1089	6 0 67 <1 994 1148 1106 1294
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 0 62 <1 979 1038 1023	2 0 63 <1 922 1089 1013	6 0 67 <1 994 1148 1106
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	<1 0 62 <1 979 1038 1023 1230	2 0 63 <1 922 1089 1013 1194	6 0 67 <1 994 1148 1106 1294
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	0 0 60 1010 1070 1150 1270 2060	<1 0 62 <1 979 1038 1023 1230 3324	2 0 63 <1 922 1089 1013 1194 3033	6 0 67 <1 994 1148 1106 1294 3703
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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 0 62 <1 979 1038 1023 1230 3324 current	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1	6 0 67 <1 994 1148 1106 1294 3703 history2
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 method	0 0 60 1010 1070 1150 1270 2060	<1 0 62 <1 979 1038 1023 1230 3324 current 11	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46	6 0 67 <1 994 1148 1106 1294 3703 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 kimit/base	<1 0 62 <1 979 1038 1023 1230 3324 <u>current</u> 11 4	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 62 <1 979 1038 1023 1230 3324 current 11 4 3	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	<1 0 62 <1 979 1038 1023 1230 3324 current 11 4 3 Current	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0 0 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 limit/base >25 >20	<1 0 62 <1 979 1038 1023 1230 3324 <u>current</u> 11 4 3 <u>current</u> 0.6	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2 history1 0.5	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0 0 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	<1 0 62 <1 979 1038 1023 1230 3324 <i>current</i> 11 4 3 <i>current</i> 0.6 11.9	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2 history1 0.5 8.5	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0 history2 0.6 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 imit/base >25 imit/base >4 >20	<1 0 62 <1 979 1038 1023 1230 3324 <u>current</u> 11 4 3 <u>current</u> 0.6 11.9 20.2	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2 history1 0.5 8.5 19.7	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0 history2 0.6 9.8 20.0
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 D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	<1 0 62 <1 979 1038 1023 1230 3324 Current 11 4 3 Current 0.6 11.9 20.2 Current	2 0 63 <1 922 1089 1013 1194 3033 history1 ▲ 46 <1 2 history1 0.5 8.5 19.7 history1	6 0 67 <1 994 1148 1106 1294 3703 history2 6 5 0 history2 0.6 9.8 20.0 history2



OIL ANALYSIS REPORT



		VISUAL		method				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
/22	/23		scalar	*Visual	NORML	NORML	NORML	NORML
Dec27/22	Jul5/23	Appearance 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	history2
		Visc @ 100°C	cSt	ASTM D445		12.6	13.7	13.8
		GRAPHS	001		10.1	1210	10.7	10.0
		Ferrous Alloys						
22		25 iron						
Dec27/22	Jul5/23	20 - nickel		/				
		15-		\sim				
		الله المراجع ا 10-						
		5						
		5						
		123 123	1/22	5/23	2/23 - 600000000			
		Mar14/22 Jun23/22	Dec27/22	Jul5/23	Dec8/23			
		Non-ferrous Meta	ls					
		10 copper]		·				
		8 - Reason lead						
		ε 6-						
		8 4						
		2						
				Contraction of the Party of the	Contraction of the local division of the loc			
		Mar14/22 Jun23/22	Dec27/22	Jul5/23	Dec8/23			
				7	De			
		Viscosity @ 100°C	2			Base Number		
		18 - Abnormal			10.0	Base		
		17-		I	- 8.0			
					0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			
		C) ¹⁶ Base 0015 3 14			B_ 6.0)		
		10 73 14			Jag u 4.0	1		
		12			Se Nr			
		13 Abnormal	1	 	2.0)		
		11						
		Mar14/22	7/22 ·	Jul5/23 -	Dec8/23		Dec27/22 -	Jul5/23 -
		Mar14/22 Jun23/22	Dec27/22	Jul	Dec	Mar14/22 Jun23/22	Dec2	Jul
	Laboratory Sample No. Lab Number Unique Numbe	: 06036682	501 Madia Recieved Diagnose Diagnost	d :15 ed :18	ry, NC 27513 Dec 2023 Dec 2023 s Davis	3 GFL En		9 35 - Omro H 0 Alder Avenu Omro, V US 5496
ficate L2367	Test Packag	e : FLEET t, contact Customer Serv	•					act: Tim Kieffe er@gflenv.co



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Submitted By: See also GFL935 - Tim Kieffer