

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 183834

Component Diesel Engine

Fluid

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

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. No other contaminants were detected in the oil.

Fluid Condition

The oil viscosity is lower than normal. Confirm oil type. The AN level is acceptable for this fluid.

Dee2020 Feb2021 Mar2023 Dee2023						
SAMPLE INFORM	/ ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0057401	PCA0057275	PCA0020857
Sample Date		Client Info		11 Dec 2023	07 Mar 2023	26 Feb 2021
Machine Age	mls	Client Info		451060	400519	252216
Oil Age	mls	Client Info		13000	22200	20500
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	NORMAL	NORMAL
CONTAMINATI	ON	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	4	7	8
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	3
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	2
Tin	ppm	ASTM D5185m	>15	0	0	0
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		<1	0	0
Codmium		AOTH DEADE				0
Caumum	ppm	ASTM D5185M		0	0	0
ADDITIVES	ppm	method	limit/base	0 current	0 history1	0 history2
ADDITIVES Boron	ppm ppm	ASTM D5185m method ASTM D5185m	limit/base 0	0 current 1	0 history1 10	0 history2 4
ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m	limit/base 0 0	0 current 1 0	0 history1 10 0	0 history2 4 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60	0 current 1 0 53	0 history1 10 0 50	0 history2 4 0 61
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0	0 current 1 0 53 0	0 history1 10 0 50 <1	0 history2 4 0 61 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010	0 current 1 0 53 0 898	0 history1 10 0 50 <1 966	0 history2 4 0 61 <1 1119
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	imit/base 0 0 0 60 0 1010 1070	0 current 1 0 53 0 898 1014	0 history1 10 0 50 <1 966 1182	0 history2 4 0 61 <1 1119 1196
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150	0 current 1 0 53 0 898 1014 1007	0 history1 10 0 50 <1 966 1182 1041	0 history2 4 0 61 <1 1119 1196 1188
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270	0 current 1 0 53 0 898 1014 1007 1194	0 history1 10 0 50 <1 966 1182 1041 1265	0 history2 4 0 61 <1 1119 1196 1188 1211
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060	0 current 1 0 53 0 898 1014 1007 1194 2940	0 history1 10 0 50 <1 966 1182 1041 1265 4029	0 history2 4 0 61 <1 1119 1196 1188 1211 2686
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Mathod	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 current 1 0 53 0 898 1014 1007 1194 2940 current	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	imit/base 0 0 0 0 0 1010 1070 1150 1270 2060 imit/base >25	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	limit/base 0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	imit/base 0 0 0 0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0 0.2	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 <1.0	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	imit/base 0 0 0 0 0 1010 1070 1150 1270 2060 205 >20 >20 imit/base bititi/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 1 <1 0 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current 0.1	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 <1.0 <1.0 history1 0.2	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 history2 0.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM DS185m method ASTM DS185m	imit/base 0 0 60 0 1010 1070 1150 1270 2060 imit/base >20 >5 imit/base >3 >20	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current 0.1 7.7	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 <1.0 <1.0 history1 0.2 6.8	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 history2 0.4 9.7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM DS188m method ASTM DS185m	imit/base 0 0 0 1010 1010 1070 1150 1270 2060 imit/base >25 >20 >3 >20 >30	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current 0.1 7.7 22.0	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 <10 <1.0 history1 0.2 6.8 18.3	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 history2 0.4 9.7 21.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D78415	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current 0.1 7.7 22.0	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 1 <1 <1.0 history1 0.2 6.8 18.3 history1	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 kistory2 0.4 9.7 21.2 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM DS185m method ASTM DS185m	imit/base 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 current 1 0 53 0 898 1014 1007 1194 2940 current 13 2 0 0.2 current 0.1 7.7 22.0 current 22.7	0 history1 10 0 50 <1 966 1182 1041 1265 4029 history1 8 1 1 <1 <1.0 history1 0.2 6.8 18.3 history1 13.6	0 history2 4 0 61 <1 1119 1196 1188 1211 2686 history2 8 2 10 <1.0 kistory2 0.4 9.7 21.2 history2 17.5

Contact/Location: MARCEY LIGHTFOOT - VALSTO



OIL ANALYSIS REPORT







Vhite Metal	scalar	*Visual	NONE	NONE	NONE	NONE
ellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
recipitate	scalar	*Visual	NONE	NONE	NONE	NONE
ilt	scalar	*Visual	NONE	NONE	NONE	NONE
ebris	scalar	*Visual	NONE	NONE	NONE	NONE
and/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
ppearance	scalar	*Visual	NORML	NORML	NORML	NORML
dor	scalar	*Visual	NORML	NORML	NORML	NORML
mulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
ree Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	e current	history1	history2
isc @ 100°C	cSt	ASTM D445	15.4	11.4	13.9	14.3
GRAPHS						
Iron (ppm)				Lead (ppm))	
Severe				Severe		
]				60		
Abnormal			mqq	40 Abnormal		
-			1	20		
				0		
3/20		7/23 -	1/23 -	3/20 -	6/21.	c7//
Deci Deci		Mar	Dec1	Dec	Feb2	Ma
Aluminum (ppm)				Chromium	(ppm)	
Severe				40 - Severe		1 1 •
				30-		
Abnormal		1		20 Abnormal		1 1 1
				10-		
				0		
26/21		7/23	1/23	3/20	26/21	c7/[]
Feb		Ma	Deci	Dec	Feb	Ma
Copper (ppm)				Silicon (ppn	n)	
Severe Publiconnal						
			_	60-		
			lag	40 Abnormal		
				20-	1	
26/21		r7/23	1/23	:3/20	26/21	c7/U
Pec		Mar	Dec1	Dec	Feb	IVIdi
Viscosity @ 100°(2		1	Base Numb	er	
Abnormal			(B/HO	0.0 - Base		
Base			j mg K	8.0		
			nber	6.0		
Abnormal			se Nur	2.0-		
			Bas	0.0		
21		r7/23	1/23	:3/20	26/21	c7/U
33/		115		0	- 2	/5

Laboratory Sample No. Lab Number **Unique Number** Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel) Certificate L2367 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.

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Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: MARCEY LIGHTFOOT - VALSTO

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