

## **OIL ANALYSIS REPORT**

Sample Rating Trend



#### Machine Id MH-89 Component Diesel Engine Fluid PETRO CANADA 15W40 (--- GAL)

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

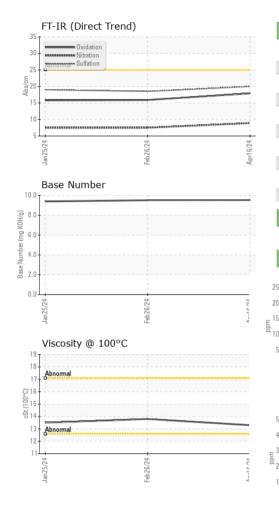
#### Fluid Condition

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		PCA0123782	PCA0118508	PCA0112769
Sample Date		Client Info		16 Apr 2024	26 Feb 2024	25 Jan 2024
Machine Age	hrs	Client Info		7607	6965	6538
Oil Age	hrs	Client Info		0	427	414
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	5	5	6
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	1
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 3	history1 4	history2 <1
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	3 0 61	4 0 62	<1 <1 60
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	3 0 61 <1	4 0 62 0	<1 <1 60 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 61 <1 968	4 0 62 0 962	<1 <1 60 0 934
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 61 <1 968 1032	4 0 62 0 962 1039	<1 <1 60 0 934 1059
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 61 <1 968 1032 1040	4 0 62 0 962 1039 1114	<1 <1 60 0 934 1059 891
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	3 0 61 <1 968 1032	4 0 62 0 962 1039 1114 1264	<1 <1 60 0 934 1059 891 1207
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	limit/base	3 0 61 <1 968 1032 1040	4 0 62 0 962 1039 1114	<1 <1 60 0 934 1059 891
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 ASTM D5185m	limit/base	3 0 61 <1 968 1032 1040 1271 3316 current	4 0 62 0 962 1039 1114 1264 3411 history1	<1 <1 60 0 934 1059 891 1207 3053 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m	limit/base	3 0 61 <1 968 1032 1040 1271 3316 current 3	4 0 62 0 962 1039 1114 1264 3411 history1 4	<1 <1 60 0 934 1059 891 1207 3053 history2 2
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 <b>method</b> ASTM D5185m	limit/base >25	3 0 61 <1 968 1032 1040 1271 3316 current 3 3 3	4 0 62 0 962 1039 1114 1264 3411 history1 4 2	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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 ASTM D5185m	limit/base >25	3 0 61 <1 968 1032 1040 1271 3316 current 3	4 0 62 0 962 1039 1114 1264 3411 history1 4	<1 <1 60 0 934 1059 891 1207 3053 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	3 0 61 <1 968 1032 1040 1271 3316 current 3 3 3 3 3	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 3 history1	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 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 TS ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	3 0 61 <1 968 1032 1040 1271 3316 current 3 3 3 3 Current 0.1	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 history1 0.1	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	3 0 61 <1 968 1032 1040 1271 3316 <u>current</u> 3 3 3 3 <u>current</u> 0.1 8.9	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 history1 0.1 7.5	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 history2 0.1 7.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	3 0 61 <1 968 1032 1040 1271 3316 current 3 3 3 3 Current 0.1	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 history1 0.1	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 history2 0.1
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	limit/base >25 >20 limit/base >3 >20	3 0 61 <1 968 1032 1040 1271 3316 <u>current</u> 3 3 3 3 <u>current</u> 0.1 8.9	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 history1 0.1 7.5	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 history2 0.1 7.5
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	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	limit/base >25 >20 limit/base >3 >20 >30	3 0 61 <1 968 1032 1040 1271 3316 <b>current</b> 3 3 3 3 3 <b>current</b> 0.1 8.9 20.0	4 0 62 0 962 1039 1114 1264 3411 history1 4 2 3 history1 0.1 7.5 18.5	<1 <1 60 0 934 1059 891 1207 3053 history2 2 0 4 history2 0.1 7.5 19.0



# **OIL ANALYSIS REPORT**



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			
Appearance						NORML			
0001						NORML			
			>0.2			NEG			
				NEG		NEG			
		method	limit/base	current	history1	history2			
	cSt	ASTM D445		13.3	13.8	13.5			
			100						
200 Severe				Severe					
= 150-			60						
abnormal			<sup>둽</sup> 40	- Abnormal					
50 -			20						
0	4		6	54	54				
an 25/2	sb26/2		pr16/2	an 25/2	sb26/2				
			Ř						
<sup>50</sup> T									
40 - Severe				Severe					
g. <sup>30</sup>			E 30						
a 20 - Abnormal			<sup>2</sup> 20	Abnormal					
10-			10	-					
	/24		0	//24	/24				
Jan 25	Feb26		Apr16	Jan 25	Feb 26				
Copper (ppm)						Silicon (ppm)			
400 Severe			80	Severe					
300			60						
툡 200			톱 40	A					
100-				Apnormal					
0			0						
Jan 25/24	Feb26/24		Apr16/24	Jan 25/24	Feb26/24				
E	Feb		Apr	Jan					
-									
Viscosity @ 100°	С			Base Number					
Viscosity @ 100°	C		( <sup>10.0</sup>						
Viscosity @ 100°	C		(B/HO X 8.0 ш) 6.0						
Viscosity @ 100°	c		(10.0 (5)/HOX 8.0 0.0 But 10.0 10.0 But 10.0 10.0 10.0 But 10.0 10.0 But 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0						
Viscosity @ 100°	C		(6)/HOX (6)/HOX (6)/ (6)/HOX (6)/ (6)/ (1)/ (1)/ (1)/ (1)/ (1)/ (1)/ (1)/ (1						
Viscosity @ 100°	C		(D)HOX 8.0 6.0 Japan 4.0		teb.26.24 -				
	Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Iron (ppm) Copper (ppm) Copper (ppm)	Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar Free Water scalar Visc @ 100°C cSt GRAPHS Iron (ppm)	Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual Free Water scalar *Visual Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Iron (ppm) Graphic for the scalar for the	Silt scalar "Visual NONE Debris scalar "Visual NONE Appearance scalar "Visual NORML Odor scalar "Visual NORML Emulsified Water scalar "Visual NORML Emulsified Water scalar "Visual >0.2 Free Water scalar "Visual >0.2 Free Water scalar "Visual SCA Visc @ 100°C cSt ASTM D445 GRAPHS Iron (ppm) Copper (ppm) Copper (ppm) Copper (ppm) Copper (ppm)	Silt scalar 'Visual NONE NONE Debris scalar 'Visual NONE NONE Sand/Dirt scalar 'Visual NONE NONE Appearance scalar 'Visual NORML NORML Odor scalar 'Visual NORML NORML NORML Emulsified Water scalar 'Visual >0.2 NEG Free Water scalar 'Visual >0.2 NEG Free Water scalar 'Visual NORML NORML Visc @ 100°C cSt ASTM D445 13.3 GRAPHS Iron (ppm)	Silt scalar *Visual NONE NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NORML NORML NORML Visc @ 100°C cSt ASTM D445 13.3 13.8 GRAPHS Iron (ppm)			

Page 2 of 2