

OIL ANALYSIS REPORT

Sample Rating Trend

VISCOSITY

DR176

Component Hydraulic System

PETRO CANADA ENVIRON MV 46 (60 LTR)

DIAGNOSIS

Recommendation

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Fluid Condition

Viscosity of sample indicates oil is within ISO 32 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

		Sep2019	eb2020 Feb2021	Jun2021 Oct2021 Oct2021	Feb2024	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0080523	PC0080571	PC0052150
Sample Date		Client Info		12 Feb 2024	14 Jan 2024	20 Oct 2021
Machine Age	hrs	Client Info		9709	1121	7165
Oil Age	hrs	Client Info		0	250	0
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				ABNORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METAL	.S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	2	4	2
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	0	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		0	0	0
Aluminum	ppm	ASTM D5185(m)	>10	<1	<1	<1
Lead	ppm	ASTM D5185(m)	>10	<1	<1	1
Copper	ppm	ASTM D5185(m)	>75	<1	7	<1
Tin	ppm	ASTM D5185(m)	>10	0	0	<1
Antimony	ppm	ASTM D5185(m)		0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)				
	ppin	A0110 D0100(III)		0	0	0
ADDITIVES	ppm	method	limit/base	current	0 history1	0 history2
ADDITIVES Boron		method	limit/base		-	-
Boron	ppm		0	current	history1	history2
Boron Barium	ppm ppm	method ASTM D5185(m) ASTM D5185(m)	0	current 0	history1 175	history2 <1
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	Current O O O	history1 175 0	history2 <1 0
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0	Current O O O O O	history1 175 0 0	history2 <1 0 0 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 0	Current 0 0 0 0 5	history1 175 0 0 0 0 4	history2 <1 0 0 0 10
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)	0 0 0 0 0 0	Current O O O O O	history1 175 0 0 0 0 4 753	history2 <1 0 0 0 10 ▲ 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)	0 0 0 0 0 0 650	Current 0 0 0 0 5 4 452	history1 175 0 0 0 0 4	history2 <1 0 0 0 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	Method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 0 0 650	Current 0 0 0 0 5 4	history1 175 0 0 0 4 753 166	history2 <1 0 0 0 0 10 ▲ 6 268
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	methodASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)ASTM D5185(m)	0 0 0 0 0 0 650 0	Current 0 0 0 0 5 4 4 52 31	history1 175 0 0 0 0 4 753 166 32	history2 <1 0 0 0 0 10 ▲ 6 268 ▲ 44
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	methodASTM D5185(m)ASTM D5185(m)	0 0 0 0 0 650 0 1420	Current 0 0 0 5 4 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 0 0 650 0 1420	current 0 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 10 ▲ 6 268 ▲ 44 ♦ 972 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 0 650 0 1420	current 0 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1 history2 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 0 650 0 1420 limit/base >20	Current 0 0 0 0 0 0 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1 history2 1 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 0 650 0 1420 1420 1 1420 1 1 1420 1 1 1 1 20 1 1 1 1 20 1 1 1 1 20	current 0 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	<1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 650 0 1420 1420 1420 1 1420 1 2 20 1 2 20 1 1 2 20 1 1 1 1 2 20 1 1 1 2 20 1 1 1 2 20 1 1 2 20 1 1 1 1	Current 0 0 0 0 0 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1 history2 1 5 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 650 0 1420 1420 1420 1420 10 1420 10 10 10 10 10 10 10 10 10 10 10 10 10	Current 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1 history2 1 5 <1 history2 ▲ 13260
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m)	0 0 0 0 650 0 1420 1420 1420 20 1 220 1 220 1 1 2 20 1 1 1 1 1 2 2 0 2 1 3 2 0 2 1 3 2 0 2 1 3 2 0 2 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1	current 0 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1 0 0 0 10 ▲ 6 268 ▲ 44 ▲ 972 <1 history2 1 5 <1 history2 1 5 <1 ↓ 13260 ▲ 3506
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 650 0 1420 1420 1420 10 1420 20 10 20 10 10 20 20 10 10 20 20 20 20 20 20 20 20 20 20 20 20 20	current 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	<1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 6 6 5 0 1420 1420 1420 1420 1420 1420 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 10 140 14	Current 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 6 5 0 6 5 0 1 4 2 0 1 4 2 0 1 4 2 0 1 1 4 2 0 1 1 4 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 1 2 1 1 1 1	Current 0 0 0 0 0 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	<1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 6 5 0 6 5 0 1 4 2 0 1 4 2 0 1 4 2 0 1 1 4 2 0 1 1 4 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 2 0 1 1 1 2 1 1 1 1	Current 0 0 0 0 5 4 452 31 1250 <1	history1 175 0 0 0 4 753 166 32 1903 <1	history2 <1



Abnormal Base

11-

cSt (100°C)

Sep12/19

55 50 Abnormal

45 Base

491,520 122,880

(m 30,720 (m 1,30,720 1,920 1,920 480 1,920 480 120 30 30 8 2 0

0.40

0.30 (mg KOH/g)

Acid Nun 10

0.00

40k 35k 30k 30k 20k 20k 20k 10k 5k 0k

Sep12/19

Viscosity @ 100°C

n/71/70

🔺 Viscosity @ 40°C

h Cha

Particle Count

Acid Number

Feb21/20

Particle Trend

-eh21/20

Feb26/21

eb26/21

144

Feb26/21

Feb26/2

C/6Cm

Jun29/2

214

-eb12/24 -

Feb12/24

Oct20/21

lun29/21

0ct20/21

OIL ANALYSIS REPORT

FLUID DEGRAD	JATION	method	limit/base	current	history1	history
Acid Number (AN)	mg KOH/g	ASTM D974*	0.12	0.07	0.34	0.14
VISUAL		method	limit/base	current	history1	history
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*	>0.1	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history
Visc @ 40°C	cSt	ASTM D7279(m)	45.0	A 33.9	29.9	2 7.9
Visc @ 100°C	cSt	ASTM D7279(m)	8.2	<u> </u>	5.6	6.5
Viscosity Index (VI)	Scale	ASTM D2270*	158	164	128	1 99
SAMPLE IMAG	ies	method	limit/base	current	history1	history
Color						
Detter						
Bottom					6	CP

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Green Infrastructure and Partners Inc (GIPI)-286-Shoring & Foundations Laboratory CALA Sample No. : PC0080523 Received : 22 Feb 2024 151 Ram Forest Rd, Lab Number : 02617414 Tested : 26 Feb 2024 Stouffville, ON ISO 17025:2017 Accredited Laboratory Unique Number : 5734524 Diagnosed : 26 Feb 2024 - Kevin Marson CA L4A 2G8 Test Package : IND 2 (Additional Tests: KV100, VI) Contact: Shannon Abbott To discuss this sample report, contact Customer Service at 1-800-268-2131. sabbott@gipi.com Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (905)750-5900 Validity of results and interpretation are based on the sample and information as supplied. F: