

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## **VISCOSITY**



# Machine Id CATERPILLAR 3280 20-59 (S/N CAT0328DCGTN00603)

Component **Diesel Engine** 

PETRO CANADA DURON XL SYN BLEND 15W40 (8 GAL)

### **DIAGNOSIS**

#### Recommendation

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

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

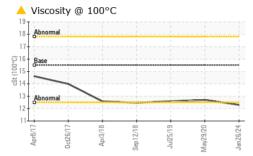
## Fluid Condition

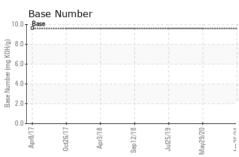
The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

SYN BLEND 15W40	,	Apr2017	Oct2017 Apr2018 :	Sep 2018 Jul 2019 May 2020	Jan2024	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0056826	PCA0024084	PCA0002357
Sample Date		Client Info		26 Jan 2024	29 May 2020	25 Jul 2019
Machine Age	hrs	Client Info		13828	13292	12834
Oil Age	hrs	Client Info		536	550	801
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				MARGINAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
lron	ppm	ASTM D5185m	>100	15	12	18
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	<1	1	2
Lead	ppm	ASTM D5185m	>40	0	1	4
Copper	ppm	ASTM D5185m	>330	<1	11	46
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Antimony	ppm	ASTM D5185m			0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	nnm				history1	history2
Boron	ppm	ASTM D5185m	1	3	6	10
Boron Barium	ppm	ASTM D5185m ASTM D5185m	1	3 0	6	10
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60	3 0 50	6 0 61	10 0 58
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1	3 0 50	6 0 61 <1	10 0 58 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010	3 0 50 0 760	6 0 61 <1 949	10 0 58 <1 916
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070	3 0 50 0 760 1447	6 0 61 <1 949 1112	10 0 58 <1 916 1166
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070 1150	3 0 50 0 760 1447 1042	6 0 61 <1 949	10 0 58 <1 916
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1 1 60 1 1010 1070	3 0 50 0 760 1447	6 0 61 <1 949 1112 1042	10 0 58 <1 916 1166 975
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 ASTM D5185m	1 1 60 1 1010 1070 1150 1270	3 0 50 0 760 1447 1042	6 0 61 <1 949 1112 1042 1149	10 0 58 <1 916 1166 975 1093
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060	3 0 50 0 760 1447 1042 1229 3498	6 0 61 <1 949 1112 1042 1149 2462	10 0 58 <1 916 1166 975 1093 3254
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060	3 0 50 0 760 1447 1042 1229 3498 current	6 0 61 <1 949 1112 1042 1149 2462 history1	10 0 58 <1 916 1166 975 1093 3254 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060	3 0 50 0 760 1447 1042 1229 3498 current	6 0 61 <1 949 1112 1042 1149 2462 history1	10 0 58 <1 916 1166 975 1093 3254 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25	3 0 50 0 760 1447 1042 1229 3498 current 2	6 0 61 <1 949 1112 1042 1149 2462 history1	10 0 58 <1 916 1166 975 1093 3254 history2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25	3 0 50 0 760 1447 1042 1229 3498 current 2 2	6 0 61 <1 949 1112 1042 1149 2462 history1	10 0 58 <1 916 1166 975 1093 3254 history2 2 <1
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	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25 >20 >5	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D7844	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25 >20 >5	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1 0.4	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2 0.6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7844	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0 current 0.5 7.8	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1 0.4 7.8	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2 0.6 8.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7624	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25  >20 >5 limit/base >3 >20 >30	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0 current 0.5 7.8 19.7	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1 0.4 7.8 20.7	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2 0.6 8.9 21.6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	ASTM D5185m ASTM D78185m ASTM D78185m ASTM D7844 *ASTM D7844 *ASTM D7844	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30 limit/base	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0 current 0.5 7.8 19.7 current	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1 0.4 7.8 20.7 history1	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2 0.6 8.9 21.6 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7624 *ASTM D7624	1 1 60 1 1010 1070 1150 1270 2060 limit/base >25  >20 >5 limit/base >3 >20 >30	3 0 50 0 760 1447 1042 1229 3498 current 2 2 0 <1.0 current 0.5 7.8 19.7	6 0 61 <1 949 1112 1042 1149 2462 history1 1 2 1 <1.0 history1 0.4 7.8 20.7	10 0 58 <1 916 1166 975 1093 3254 history2 2 2 <1 <1.0 history2 0.6 8.9 21.6



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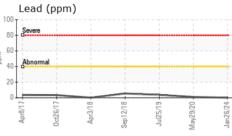


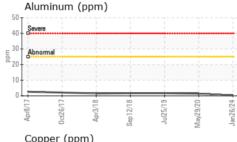
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

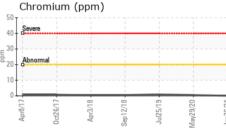
I LOID I NOI L		method	IIIIIII Dase	Current	HISTORY	Thistory Z
Visc @ 100°C	cSt	ASTM D445	15.5	<b>12.3</b>	12.7	12.6

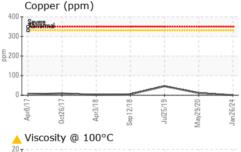
Iron 250 T	(ppm)					
200 Severe	е			į		
150				 	-	
Abno	rmal					
50						
0						
8/17	6/17-	3/18	2/18	Jul25/19 -	9/20	6/24
Apr8/1	0ct26/	Apr3/	Sep 12	Jul2	May29/2(	Jan2(

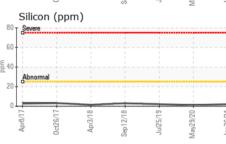
**GRAPHS** 

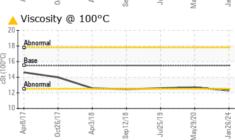


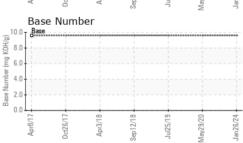














Laboratory Sample No.

Lab Number : 06120505

: PCA0056826 Unique Number: 10929338

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 18 Mar 2024 **Tested** 

: 20 Mar 2024 : 20 Mar 2024 - Jonathan Hester Diagnosed

**JOHNSON DAVIS CONTRACTORS** 604 HILBRATH DR LANTANA, FL

US 33462 Contact: GENE GARDNER ggardner@johnsondavis.com

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.

Test Package : MOB 1 (Additional Tests: FuelDilution, TBN)

T: (561)588-1170 F:

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

Report Id: JOHLANPCA [WUSCAR] 06120505 (Generated: 03/20/2024 16:20:42) Rev: 1