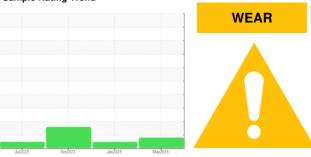


# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

# **DAEWOO TOWERSIDE PG1**

**Propane Engine** 

PETRO CANADA SENTRON LD 5000 (--- GAL)

### DIAGNOSIS

### Recommendation

Please note that all wear metal and contaminant levels are being considered accumulative. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MOB 2 test kits, this testkit includes BN to determine the suitability of the oil for continued use.

Lead ppm levels are marginal. A sharp increase in the lead level is noted. Bearing wear is indicated.

### Contamination

There is no indication of any contamination in the oil.

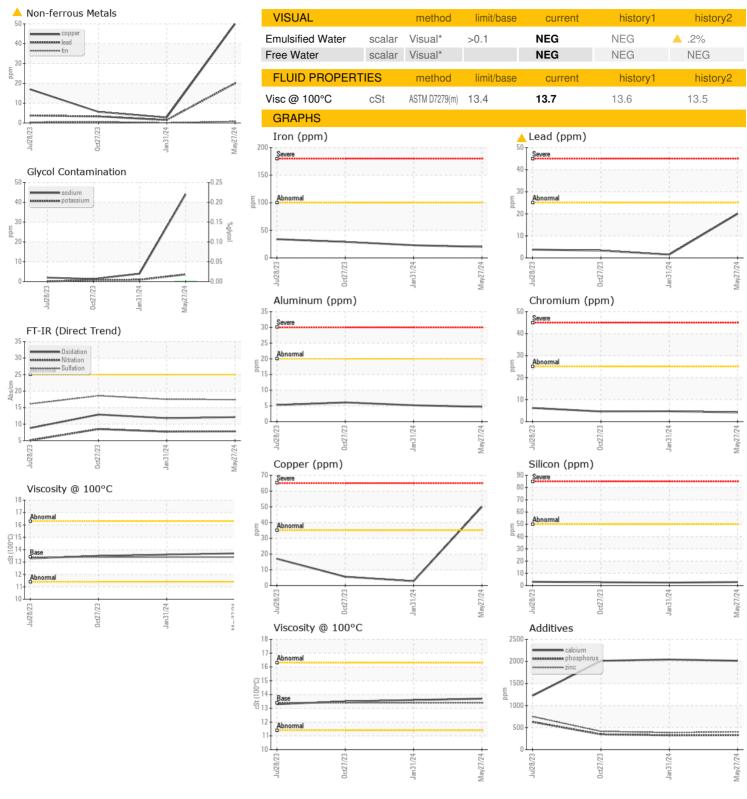
### **Fluid Condition**

The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION   method   limit/base   current   history2	AL)		Jul2023	3 Oct2023	Jan 2024 M	ay2024	
Sample Number         Client Info         WC0915629         PC0078855         PC0073810           Sample Date         Client Info         27 May 2024         31 Jan 2024         27 Oct 2023           Machine Age         hrs         Client Info         12762         12045         11485           Oil Age         hrs         Client Info         Changed         Changed         Changed         Changed           Oil Changed         Client Info         Changed         Changed         Changed         Changed         Changed           Water         WC Method         >0.1         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM DS185(m)         >0.0         20         23         29           Chromium         ppm         ASTM DS185(m)         >5         2         <1	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Date							
Machine Age         hrs         Client Info         12762         12045         11485           Oil Age         hrs         Client Info         717         570         640           Oil Changed         Client Info         Changed         Changed         Changed           Sample Status         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM DS185/m         >100         20         23         29           Chromium         ppm         ASTM DS185/m         >100         0         0         0           Nickel         ppm         ASTM DS185/m         >5         0         0         0           Aluminum         ppm         ASTM DS185/m         >5         0         0         0           Lead         ppm         ASTM DS185/m         >25         20         2         3           Apter DS18/m         ppm         ASTM DS185/m         >8         <1         <1      A	·						
Oil Age         hrs         Client Info         717         570         640           Oil Changed Sample Status         Client Info         Changed Changed Changed Changed Changed MARGINAL NORMAL ABNORMAL         Changed MARGINAL NORMAL ABNORMAL           CONTAMINATION         method limit/base current history1         history2           WEAR METALS         method limit/base current history1         history2           Iron         ppm ASTM D5185/m)         >100         20         23         29           Chromium         ppm ASTM D5185/m)         >100         20         23         29           Chromium         ppm ASTM D5185/m)         >100         20         23         29           Chromium         ppm ASTM D5185/m)         >25         4         5         5           Nickel         ppm ASTM D5185/m)         >5         2         -1         1           Silver         ppm ASTM D5185/m)         >5         0         0         0           Silver         ppm ASTM D5185/m)         >20         5         5         6           Lead         ppm ASTM D5185/m)         >20         5         5         6           Lead         ppm ASTM D5185/m)         >8         <1         <1 <th></th> <th>bro</th> <th></th> <th></th> <th>•</th> <th></th> <th></th>		bro			•		
Oil Changed Sample Status         Client Info         Changed MARGINAL         Changed NORMAL         Changed ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTIM D5188/ml         >1000         20         23         29           Chromium         ppm         ASTIM D5188/ml         >25         2         <1	•						
Sample Status	-	1115					
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM 05185(m)         >100         20         23         29           Chromium         ppm         ASTM 05185(m)         >25         4         5         5           Nickel         ppm         ASTM 05185(m)         >25         2         <1			Olletti IIIIO			Ŭ	Ü
Water         WC Method         >0.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >100         20         23         29           Chromium         ppm         ASTM D5185(m)         >25         4         5         5           Nickel         ppm         ASTM D5185(m)         >5         2         <1	-		and the seal	1''-		-	
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >100         20         23         29           Chromium         ppm         ASTM D5185(m)         >25         4         5         5           Nickel         ppm         ASTM D5185(m)         >5         2         <1         1           Titanium         ppm         ASTM D5185(m)         >5         0         0         0           Silver         ppm         ASTM D5185(m)         >5         0         0         0           Aluminum         ppm         ASTM D5185(m)         >20         5         5         6           Lead         ppm         ASTM D5185(m)         >20         2         3         6           Tin         ppm         ASTM D5185(m)         >8         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <		V					
Iron					NEG		
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185(m)         >5         2         <1	Iron	ppm	ASTM D5185(m)	>100	20	23	29
Titanium         ppm         ASTM D5188(m)         0         0         0           Silver         ppm         ASTM D5188(m)         >5         0         0         0           Aluminum         ppm         ASTM D5188(m)         >20         5         5         6           Lead         ppm         ASTM D5188(m)         >25         20         2         3           Copper         ppm         ASTM D5188(m)         >8         <1         <1         <1           Antimony         ppm         ASTM D5188(m)         0         0         0         0           Antimony         ppm         ASTM D5188(m)         0         0         0         0           Vanadium         ppm         ASTM D5188(m)         0         0         0         0           Beryllium         ppm         ASTM D5188(m)         0         0         0         0           Cadmium         ppm         ASTM D5188(m)         2         3         1         <1           Boron         ppm         ASTM D5188(m)         2         3         1         <1           Barium         ppm         ASTM D5188(m)         2         3         1         <1 </th <th>Chromium</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th>&gt;25</th> <th>4</th> <th></th> <th></th>	Chromium	ppm	ASTM D5185(m)	>25	4		
Silver         ppm         ASTM D5188(m)         >5         0         0         0           Aluminum         ppm         ASTM D5188(m)         >20         5         5         6           Lead         ppm         ASTM D5188(m)         >25         ▲ 20         2         3           Copper         ppm         ASTM D5188(m)         >35         50         3         6           Tin         ppm         ASTM D5188(m)         0         0         0         0           Antimony         ppm         ASTM D5188(m)         0         0         0         0           Vanadium         ppm         ASTM D5188(m)         0         0         0         0           Vanadium         ppm         ASTM D5188(m)         0         0         0         0           Beryllium         ppm         ASTM D5188(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5188(m)         2         3         1         <1	Nickel		. ,	>5			
Aluminum         ppm         ASTM D5185(m)         >20         5         5         6           Lead         ppm         ASTM D5185(m)         >25         ▲ 20         2         3           Copper         ppm         ASTM D5185(m)         >35         50         3         6           Tin         ppm         ASTM D5185(m)         >8         <1         <1         <1           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2         3         1         <1           Barium         ppm         ASTM D5185(m)         0         2         <1         <1           Magnesium         ppm         ASTM D5185(m)         0         <1 <t< th=""><th></th><th>ppm</th><th>ASTM D5185(m)</th><th></th><th></th><th></th><th></th></t<>		ppm	ASTM D5185(m)				
Lead         ppm         ASTM D5(85(m))         >25         ▲ 20         2         3           Copper         ppm         ASTM D5(85(m))         >35         50         3         6           Tin         ppm         ASTM D5(85(m))         >8         <1			. ,				
Copper		ppm	. ,				
Tin							
Antimony			( /				
Vanadium         ppm         ASTM D5185(m)         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2         3         1         <1			. ,	>8			
Beryllium	•		. ,				
Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2         3         1         <1           Barium         ppm         ASTM D5185(m)         3         0         0         0           Molybdenum         ppm         ASTM D5185(m)         0         2         <1         <1           Magnesium         ppm         ASTM D5185(m)         0         <1         0         <1           Magnesium         ppm         ASTM D5185(m)         4         9         11         10           Calcium         ppm         ASTM D5185(m)         1727         2015         2044         2013           Phosphorus         ppm         ASTM D5185(m)         272         330         325         346           Sulfur         ppm         ASTM D5185(m)         333         403         387         414           Lithium         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         >50							
ADDITIVES							
Boron		ppm	. ,		U		-
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         0         2         <1	Boron	ppm	ASTM D5185(m)	2	3	1	<1
Manganese         ppm         ASTM D5185(m)         0         <1	Barium	ppm	ASTM D5185(m)	3	0	0	0
Magnesium         ppm         ASTM D5185(m)         4         9         11         10           Calcium         ppm         ASTM D5185(m)         1727         2015         2044         2013           Phosphorus         ppm         ASTM D5185(m)         272         330         325         346           Zinc         ppm         ASTM D5185(m)         333         403         387         414           Sulfur         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         3415         2964         2874         3011           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >20         4         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1	Molybdenum	ppm	ASTM D5185(m)	0	2		<1
Calcium         ppm         ASTM D5185(m)         1727         2015         2044         2013           Phosphorus         ppm         ASTM D5185(m)         272         330         325         346           Zinc         ppm         ASTM D5185(m)         333         403         387         414           Sulfur         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >20         4         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1         <1           Glycol         %         ASTM D78185(m)         >20         4         <1         <1           FLUID DEGRADATION         Method         limit/base         cur		ppm		0			
Phosphorus         ppm         ASTM D5185(m)         272         330         325         346           Zinc         ppm         ASTM D5185(m)         333         403         387         414           Sulfur         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         <1	-	ppm	. ,				
Zinc         ppm         ASTM D5185(m)         333         403         387         414           Sulfur         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         >20         4         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1         <1           Glycol         %         ASTM D7922*         0.0             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         0         0         0         0           Nitration         Abs/:nm         ASTM D7415*         >30         17.4         17.5		ppm	. ,	1727			2013
Sulfur         ppm         ASTM D5185(m)         3415         2964         2874         3011           Lithium         ppm         ASTM D5185(m)         <1		ppm	. ,				
Lithium         ppm         ASTM D5185(m)         <1		ppm					
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         44         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1         <1           Glycol         %         ASTM D7922*         0.0              INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         0         0         0           Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2		ppm	1 /				
Silicon         ppm         ASTM D5185(m)         >50         3         2         3           Sodium         ppm         ASTM D5185(m)         44         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1	Lithium	ppm	ASTM D5185(m)		<1	<1	
Sodium         ppm         ASTM D5185(m)         44         4         1           Potassium         ppm         ASTM D5185(m)         >20         4         <1         <1           Glycol         %         ASTM D7922*         0.0             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         0         0         0           Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185(m)         >20         4         <1	Silicon	ppm	ASTM D5185(m)	>50	3	2	3
Glycol         %         ASTM D7922*         0.0             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         0         0         0           Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2	Sodium	ppm	ASTM D5185(m)		44	4	1
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         0         0         0           Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2	Potassium	ppm	ASTM D5185(m)	>20	4	<1	<1
Soot %         %         ASTM D7844*         0         0         0           Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2	Glycol	%	ASTM D7922*		0.0		
Nitration         Abs/cm         ASTM D7624*         >20         7.8         7.7         8.5           Sulfation         Abs/.1mm         ASTM D7415*         >30         17.4         17.5         18.6           FLUID DEGRADATION         method         limit/base         current         history1         history2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation     Abs/.1mm     ASTM D7415*     >30     17.4     17.5     18.6       FLUID DEGRADATION     method     limit/base     current     history1     history2	Soot %	%	ASTM D7844*		0	0	0
FLUID DEGRADATION method limit/base current history1 history2	Nitration	Abs/cm	ASTM D7624*	>20	7.8	7.7	8.5
	Sulfation	Abs/.1mm	ASTM D7415*	>30	17.4	17.5	18.6
Oxidation Abs/1mm ASTM D7414* >25 <b>12.1</b> 11.8 12.9	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	ASTM D7414*	>25	12.1	11.8	12.9



# **OIL ANALYSIS REPORT**





CALA ISO 17025:2017 Accredited Laboratory

Sample No.

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9

: WC0915629 Lab Number : 02647335 Unique Number : 5812887

Diagnosed Test Package : MOB 1 ( Additional Tests: GLYCOL )

Received

**Tested** 

: 11 Jul 2024

: 12 Jul 2024

: 15 Jul 2024 - Kevin Marson

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

**Martin Energy Group Canada** 

5531 Schummer Line Linwood, ON CA NOB 2A0

Contact: J Wagler jwagler@martinenergygroup.com

T: F: