

# **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



CATERPILLAR BACK HOE 137

**Transmission** 

PETRO CANADA (--- GAL)

#### Birtanoolo

Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the fluid.

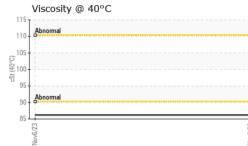
#### Fluid Condition

The condition of the fluid is acceptable for the time in service.

SAMPLE INFORMATIONmethodlimit/basecurrenthistory1Sample NumberClient Info06 Nov 2023Sample DateClient Info13248Machine AgehrsClient Info13248Oil AgehrsClient Info13248Oil ChangedClient InfoN/ASample StatusImit/basecurrenthistory1WaterWC Method>0.1NEGWEAR METALSmethodlimit/basecurrenthistory1IronppmASTM D5185m>2003NickelppmASTM D5185m>2003NickelppmASTM D5185m0AluminumppmASTM D5185m0AluminumppmASTM D5185m>501LeadppmASTM D5185m>501CopperppmASTM D5185m>100VanadiumppmASTM D5185m0ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m6ManganeseppmASTM D5185m6ManganeseppmASTM D5185m116MangenesiumppmASTM D5185m116Mangenesiumppm	-
Sample Date         Client Info         06 Nov 2023             Machine Age         hrs         Client Info         13248             Oil Age         hrs         Client Info         277             Oil Changed         Client Info         N/A              Oil Changed         Client Info         N/A              Sample Status         Imathematical Status         Imathematical Status	- history2 history2
Machine Age       hrs       Client Info       13248           Oil Age       hrs       Client Info       277           Oil Changed       Client Info       N/A            Sample Status       Imather Client Info       N/A            CONTAMINATION       method       limit/base       current       history1          Water       WC Method       >0.1       NEG           WEAR METALS       method       limit/base       current       history1          Water       WC Method       >0.1       NEG           WEAR METALS       method       limit/base       current       history1          Water       WC Method       >0.1       0 <td>- history2 history2</td>	- history2 history2
Oil AgehrsClient Info277Oil ChangedClient InfoN/ASample Statusmethodlimit/basecurrenthistory1WaterWC Method>0.1NEGWEAR METALSmethodlimit/basecurrenthistory1IronppmASTM D5185m>2003NickelppmASTM D5185m>100NickelppmASTM D5185m01NickelppmASTM D5185m01AluminumppmASTM D5185m>501LeadppmASTM D5185m>20033CopperppmASTM D5185m>100VanadiumppmASTM D5185m>0ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m0MaganeseppmASTM D5185m6MagnesiumppmASTM D5185m6MagnesiumppmASTM D5185m2878PhosphorusppmASTM D5185m116MagnesiumppmASTM D5185m1091	- history2 history2
Oil AgehrsClient Info277Oil ChangedClient InfoN/ASample Statusmethodlimit/basecurrenthistory1WaterWC Method>0.1NEGWEAR METALSmethodlimit/basecurrenthistory1IronppmASTM D5185m>2003NickelppmASTM D5185m>100NickelppmASTM D5185m01NickelppmASTM D5185m01AluminumppmASTM D5185m>501LeadppmASTM D5185m>20033CopperppmASTM D5185m>100VanadiumppmASTM D5185m>0ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m0MaganeseppmASTM D5185m6MagnesiumppmASTM D5185m6MagnesiumppmASTM D5185m2878PhosphorusppmASTM D5185m116MagnesiumppmASTM D5185m1091	- history2 history2
Sample Status         Image: method         NORMAL             CONTAMINATION         method         limit/base         current         history1           Water         WC Method         >0.1         NEG            WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >200         3            Ohromium         ppm         ASTM D5185m         >200         3            Nickel         ppm         ASTM D5185m         >10         0            Nickel         ppm         ASTM D5185m         0          1           Aluminum         ppm         ASTM D5185m         0          1           Lead         ppm         ASTM D5185m         >50         1            Copper         ppm         ASTM D5185m         >200         33            Cadmium         ppm         ASTM D5185m         >0          2           Cadmium         ppm         ASTM D5185m         0          2           Boron         ppm	history2 history2
Sample Status         Image: method         NORMAL             CONTAMINATION         method         limit/base         current         history1           Water         WC Method         >0.1         NEG            WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >200         3            Ohromium         ppm         ASTM D5185m         >200         3            Nickel         ppm         ASTM D5185m         >10         0            Nickel         ppm         ASTM D5185m         0          1           Aluminum         ppm         ASTM D5185m         0          1           Lead         ppm         ASTM D5185m         >50         1            Copper         ppm         ASTM D5185m         >200         33            Cadmium         ppm         ASTM D5185m         >0          2           Cadmium         ppm         ASTM D5185m         0          2           Boron         ppm	history2  history2        -
CONTAMINATIONmethodlimit/basecurrenthistory1WaterWC Method>0.1NEGWEAR METALSmethodlimit/basecurrenthistory1IronppmASTM D5185m>2003ChromiumppmASTM D5185m>100NickelppmASTM D5185m>100NickelppmASTM D5185m01SilverppmASTM D5185m501AluminumppmASTM D5185m>500LeadppmASTM D5185m>20033CopperppmASTM D5185m>100VanadiumppmASTM D5185m>100ADDITIVESmethodlimit/basecurrenthistory1BoronppmASTM D5185m6MalganeseppmASTM D5185m6ManganeseppmASTM D5185m116MagnesiumppmASTM D5185m116ManganeseppmASTM D5185m116PhosphorusppmASTM D5185m11091	+ history2         
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WEAR METALSmethodlimit/basecurrenthistory1IronppmASTM D5185m>2003ChromiumppmASTM D5185m>100NickelppmASTM D5185m<1	
Iron         ppm         ASTM D5185m         >200         3            Chromium         ppm         ASTM D5185m         >10         0            Nickel         ppm         ASTM D5185m         <1	
Chromium         ppm         ASTM D5185m         >10         0            Nickel         ppm         ASTM D5185m         <1	    
Nickel         ppm         ASTM D5185m         <1            Titanium         ppm         ASTM D5185m         0          0           Silver         ppm         ASTM D5185m         0          0           Aluminum         ppm         ASTM D5185m         0          0           Aluminum         ppm         ASTM D5185m         >50         1          0           Lead         ppm         ASTM D5185m         >50         0          0           Copper         ppm         ASTM D5185m         >200         33          0           Tin         ppm         ASTM D5185m         >10         0          0           Cadmium         ppm         ASTM D5185m         0          0            ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <1	    
Titanium         ppm         ASTM D5185m         O            Silver         ppm         ASTM D5185m         O            Aluminum         ppm         ASTM D5185m         SO         1            Aluminum         ppm         ASTM D5185m         >50         1            Lead         ppm         ASTM D5185m         >50         0            Copper         ppm         ASTM D5185m         >200         33            Tin         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Monum         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         6             Barium         ppm         ASTM D5185m         6             Malganese         ppm         ASTM D5185m         6             Magnesium         ppm         ASTM D51	   
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Aluminum         ppm         ASTM D5185m         >50         1            Lead         ppm         ASTM D5185m         >50         0            Copper         ppm         ASTM D5185m         >200         33            Tin         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Magnesium         ppm         ASTM D5185m         <1	 
Lead         ppm         ASTM D5185m         >50         0            Copper         ppm         ASTM D5185m         >200         33          Image: Copper         PPm         ASTM D5185m         >200         33          Image: Copper         PPm         ASTM D5185m         >200         33          Image: Copper         PPm         ASTM D5185m         O          Image: Copper         PPm         ASTM D5185m         O          Image: Copper         Image: Copper         PPm         ASTM D5185m         O          Image: Copper         Image: Copper	 
Copper         ppm         ASTM D5185m         >200         33            Tin         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         0          0           Cadmium         ppm         ASTM D5185m         0          0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <1	
Tin         ppm         ASTM D5185m         >10         0            Vanadium         ppm         ASTM D5185m         0          0           Cadmium         ppm         ASTM D5185m         0          0           Cadmium         ppm         ASTM D5185m         0          0           ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Magnaese         ppm         ASTM D5185m         <11            Magnesium         ppm         ASTM D5185m         116            Phosphorus         ppm         ASTM D5185m         1091	
Vanadium         ppm         ASTM D5185m         0            Cadmium         ppm         ASTM D5185m         0            ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         6            Magnesium         ppm         ASTM D5185m         <11            Phosphorus         ppm         ASTM D5185m         1091	
Cadmium         ppm         ASTM D5185m         0            ADDITIVES         method         limit/base         current         history1           Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         6            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <11            Magnesium         ppm         ASTM D5185m         2878            Phosphorus         ppm         ASTM D5185m         1091	
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Boron         ppm         ASTM D5185m         6            Barium         ppm         ASTM D5185m         0            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <1	
Barium         ppm         ASTM D5185m         0            Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <1            Magnesium         ppm         ASTM D5185m         116            Calcium         ppm         ASTM D5185m         2878            Phosphorus         ppm         ASTM D5185m         1091	history2
Molybdenum         ppm         ASTM D5185m         6            Manganese         ppm         ASTM D5185m         <1            Magnesium         ppm         ASTM D5185m         116            Calcium         ppm         ASTM D5185m         2878            Phosphorus         ppm         ASTM D5185m         1091	
Manganese         ppm         ASTM D5185m         <1            Magnesium         ppm         ASTM D5185m         116            Calcium         ppm         ASTM D5185m         2878            Phosphorus         ppm         ASTM D5185m         1091	
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Calcium         ppm         ASTM D5185m         2878            Phosphorus         ppm         ASTM D5185m         1091	
Phosphorus         ppm         ASTM D5185m         1091	
Phosphorus         ppm         ASTM D5185m         1091	
Zinc ppm ASTM D5185m <b>1276</b>	
Sulfur ppm ASTM D5185m 4198	
CONTAMINANTS method limit/base current history1	history2
Silicon ppm ASTM D5185m >50 4	
Sodium         ppm         ASTM D5185m         1	
Potassium ppm ASTM D5185m >20 0	
VISUAL method limit/base current history1	history2
White Metal scalar *Visual NONE NONE	
Yellow Metal scalar *Visual NONE NONE	
Precipitate scalar *Visual NONE NONE	
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	
Emulsified Water scalar *Visual >0.1 NEG	
Free Water scalar *Visual NEG	



# **OIL ANALYSIS REPORT**



	86.2 current no image no image ead (ppm) ievere thromium (p)	no image no image pm)	no image
	no image no image ead (ppm) evere	no image no image	no image no image
200 150 50 50 50 50 50 50 50 50 50 50 50 50 5	no image ead (ppm) ievere	no image	no image
200 150 50 50 50 50 50 50 50 50 50 50 50 50 5	ead (ppm) levere		
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50 - EC/goog 25 - 20 - 20 - 20 - 20 - 20 - 20 - 20 -	hromium (p	pm)	
30 25 20	hromium (p	pm)	
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	zinc	5	
	S S S S S S S S S S S S S S S S S S S	Silicon (ppm) 140 120 80 Abnormal 40 20 0 Severe 40 40 20 0 Severe 40 40 20 0 Severe 20 0 Calcium 2000 1500	Silicon (ppm)

Contact/Location: NEIL ? - CLBMYR