

OIL ANALYSIS REPORT

Sample Rating Trend



CATERPILLAR R1600H SCP222

Front Differential

PETRO CANADA PRODURO TO-4 SAE 50 (--- GAL)

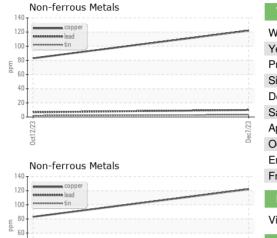




Sample Number Client Info WC0883810 WC07594.70 Basempile at the rexit service interval to monitor. Sample Date Client Info 0 260 All component wear rates are normal. Oll Age hits Client Info 0 260 There is no indication of any contamination in the oil is acceptable for the time inservice. NORMAL NORMAL NORMAL NORMAL NORMAL Viater Wafer Windrod Sample Status NORMAL NORMAL Viater Wafer Windrod Sample Status NORMAL NORMAL Viater Wafer Wafer Nordbing Sample Status Viater Wafer Wafer Nordbing Sa -1 Nordbing Nordbing Sample Status Sample Status Sample Status Nordbing Particitititititititititititititititititit	DIAGNOSIS	SAMPLE INFORM	ΙΑΤΙΟΝ	method	limit/base	current	history1	history2
Machine AgehrsClient Inio0280All contaminationOil AgedLient Inio0280The sin o indication of any contamination in the oil is acceptable for the time is no indication of any contamination in the oil is acceptable for the time is service.Client InioNORMALNORMALFuid ConditionThe condition of the oil is acceptable for the time is service.NORMALNORMALNormALCONTAMINATIONrefloodinit/casecurrentNEGContramineppmASTM05Kim>-20NEGVerantppmASTM05Kim>-2016ChromiumppmASTM05Kim>-200ChromiumppmASTM05Kim>-200SilverppmASTM05Kim>-200ChromiumppmASTM05Kim>-200SilverppmASTM05Kim>-200AutimonuppmASTM05Kim>-100AutimonuppmASTM05Kim>-100CopperppmASTM05Kim>-100AntimonyppmASTM05Kim>-00AntimonyppmASTM05Kim>-00AntimonyppmASTM05Kim00 <th>Recommendation</th> <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>WC0883810</th> <th>WC0750470</th> <th></th>	Recommendation	Sample Number		Client Info		WC0883810	WC0750470	
All component wear rates are normal. Oil Age Nra N/A Not Changed Oil Changed Oil Changed N/A Not Changed Image in the image i	Resample at the next service interval to monitor.	Sample Date		Client Info		07 Dec 2023	12 Oct 2023	
All component wear rates are normal. Oil Age hrs Client Info 0 280	Wear	Machine Age	hrs	Client Info		0	260	
Contamination Oil Changed Client Info NA Not Changed	All component wear rates are normal.	Oil Age	hrs	Client Info		0	260	
Sample Status NORMAL NORMAL		Oil Changed		Client Info		N/A	Not Changd	
Fluid Condition The condition of the oil is acceptable for the time inservice. Weater WC Method >.2 NEG NEG Water WC Method >.2 NEG NEG Weater ppm ASTM051810 >.30 -1 -1 Nickel ppm ASTM051810 >.30 -1 -1 Aluminum ppm ASTM051810 >.30 12 2 Aluminum ppm ASTM051810 >.50 3 2 Autiminum ppm ASTM051810 >.55 3 2 Autiminum ppm ASTM051810 >.5 3 2 Vanaduum ppm ASTM051810 >.5	There is no indication of any contamination in the	Sample Status				NORMAL	NORMAL	
Water WC Method >.2 NEG NEG service. Werker pm Motional pm StriM 0516500 22 16 Iron pm ASTM 0516500 >3 -1 <1 Nickel pm ASTM 0516500 >3 -1 <1 Nickel pm ASTM 0516500 >2 -1 <1 Aluminum pm ASTM 0516500 >2 -1 <1 Aluminum pm ASTM 0516500 >2 -1 <1 Auminum pm ASTM 0516500 >13 100 7 Autimum pm ASTM 0516500 >5 3 2 Autimum pm ASTM 0516500 >5 3 2 Autimum pm ASTM 0516500 >5 3 2 Autimum pm ASTM 0516500 5		CONTAMINATION	N	method	limit/base	current	history1	history2
NUCLY NUCLYCS Nited by Control Nited by Control Nited by Control Iron ppm ASTIL 0518(m) >500 22 16 Nickel ppm ASTIL 0518(m) >3 <1 <1 Nickel ppm ASTIL 0518(m) >2 0 0 Silver ppm ASTIL 0518(m) >2 <1 <1 Aluminum ppm ASTIL 0518(m) >2 <1 <1 Lead ppm ASTIL 0518(m) >30 2 2 Lead ppm ASTIL 0518(m) >5 3 2 Antimony ppm ASTIL 0518(m) 10 7 Antimony ppm ASTIL 0518(m) 5 3 2 Antimony ppm ASTIL 0518(m) 5 0 0 Cadmium ppm ASTIL 0518(m) 0 0	The condition of the oil is acceptable for the time in	Water		WC Method	>.2	NEG	NEG	
Chromium ppm ASTM D5185(m) >3 <1	service.	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185/m >3 <1		Iron	ppm	ASTM D5185(m)	>500	22	16	
Titanium ppm ASTM D5185(m) >2 0 0 Silver ppm ASTM D5185(m) >2 <1 <1 Aluminum ppm ASTM D5185(m) >30 2 2 Lead ppm ASTM D5185(m) >10 7 Copper ppm ASTM D5185(m) >5 3 2 Tin ppm ASTM D5185(m) >5 3 2 Antimony ppm ASTM D5185(m) >5 0 0 Vanadium ppm ASTM D5185(m) >5 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Baron ppm ASTM D5185(m) 0 6 6 Molybdenum ppm ASTM D5185(m) 0 0 0 Maganesse ppm ASTM D5185(m) 0 11		Chromium	ppm	ASTM D5185(m)	>3	<1	<1	
Titanium ppm ASTM D5185(m) >2 0 0 Silver ppm ASTM D5185(m) >30 2 1 <1		Nickel		ASTM D5185(m)	>3			
Aluminum ppm ASTM D5165(m) >3.0 2 2 Lead ppm ASTM D5165(m) >1.0 7 Copper ppm ASTM D5165(m) >1.03 122 8.3 Tim ppm ASTM D5165(m) >5 3 2 Antimony ppm ASTM D5165(m) >5 0 0 Vanadium ppm ASTM D5165(m) Imit/base 0 0 Cadmium ppm ASTM D5165(m) Imit/base 0 0 ADDITIVES method Imit/base current history1 history2 Boron ppm ASTM D5165(m) 0 0 0 Molybdenum ppm ASTM D5165(m) 0 0 0 Magnesium ppm ASTM D5165(m) 0 0 Magnesium ppm ASTM D5165(m) 100 4 Cataium ppm		Titanium		ASTM D5185(m)	>2	0	0	
Aluminum ppm ASTM D5165(m) >3.0 2 2 Lead ppm ASTM D5165(m) >1.0 7 Copper ppm ASTM D5165(m) >1.03 122 8.3 Tim ppm ASTM D5165(m) >5 3 2 Antimony ppm ASTM D5165(m) >5 0 0 Vanadium ppm ASTM D5165(m) Imit/base 0 0 Cadmium ppm ASTM D5165(m) Imit/base 0 0 ADDITIVES method Imit/base current history1 history2 Boron ppm ASTM D5165(m) 0 0 0 Molybdenum ppm ASTM D5165(m) 0 0 0 Magnesium ppm ASTM D5165(m) 0 0 Magnesium ppm ASTM D5165(m) 100 4 Cataium ppm		Silver	ppm	ASTM D5185(m)	>2	<1	<1	
Lead ppm ASTM D5186jm >13 10 7 Copper ppm ASTM D5186jm >103 122 83 Tin ppm ASTM D5186jm >5 3 2 Antimony ppm ASTM D5186jm >5 0 0 Vanadium ppm ASTM D5186jm > 0 0 Beryllium ppm ASTM D5186jm 0 0 Cadmium ppm ASTM D5186jm 2 4 5 Boron ppm ASTM D5186jm 0 6 Molybdenum ppm ASTM D5186jm 0 6 Magnesium ppm ASTM D5186jm 0 0 0 Magnesium ppm ASTM D5186jm 0 0 0 Magnesium ppm ASTM D5186jm 0 0 0 Magnesi		Aluminum	ppm			2	2	
Tin ppm ASTM D5185(m) >5 3 2 Antimony ppm ASTM D5185(m) >5 0 0 Vanadium ppm ASTM D5185(m) 0 0 Beryllium ppm ASTM D5185(m) 0 0 Cadmium ppm ASTM D5185(m) 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 0 6 6 Barium ppm ASTM D5185(m) 0 6 6 Magnesium ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 0 0 Magnesium ppm ASTM D5185(m) 1099 1033 1023 </th <th></th> <th>Lead</th> <th>ppm</th> <th></th> <th></th> <th>10</th> <th>7</th> <th></th>		Lead	ppm			10	7	
Antimony ppm ASTM D5185(m) >5 0 0 Vanadium ppm ASTM D5185(m) 0 0 Beryllium ppm ASTM D5185(m) 0 0 Cadmium ppm ASTM D5185(m) 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 4 5 Barium ppm ASTM D5185(m) 0 6 Molybdenum ppm ASTM D5185(m) 0 0 0 Manganese ppm ASTM D5185(m) 9 9 Qateium ppm ASTM D5185(m) 9 9 Calcium ppm ASTM D5185(m) 9 9 Qateium ppm ASTM D5185(m) 114 3023 3046 Manganesium ppm ASTM D5185(m) 1245 1213 1212 Sulfur <th></th> <th>Copper</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th>>103</th> <th>122</th> <th>83</th> <th></th>		Copper	ppm	ASTM D5185(m)	>103	122	83	
Antimony ppm ASTM D5185(m) >5 0 0 Vanadium ppm ASTM D5185(m) 0 0 Beryllium ppm ASTM D5185(m) 0 0 Cadmium ppm ASTM D5185(m) 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 2 4 5 Barium ppm ASTM D5185(m) 0 0 0 Molybdenum ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 9 9 Sulfur ppm ASTM D5185(m) 9 9 Magnesium ppm ASTM D5185(m) 114 3023 3046 Sulfur ppm ASTM D5185(m) 1245 1213 <t< th=""><th></th><th>Tin</th><th>ppm</th><th>ASTM D5185(m)</th><th>>5</th><th>3</th><th>2</th><th></th></t<>		Tin	ppm	ASTM D5185(m)	>5	3	2	
BerylliumppmASTM D5185(m)00CadmiumppmASTM D5185(m)00ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)245BariumppmASTM D5185(m)066MolybdenumppmASTM D5185(m)000MaganeseppmASTM D5185(m)0<1<1MagnesiumppmASTM D5185(m)311430233046PhosphorusppmASTM D5185(m)10910331023ZincppmASTM D5185(m)708685868901LithiumppmASTM D5185(m)708685868901SulfurppmASTM D5185(m)>10044SodiumppmASTM D5185(m)>10044		Antimony		ASTM D5185(m)	>5	0	0	
CadmiumppmASTM D5185(m)00ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)245BariumppmASTM D5185(m)066MolybdenumppmASTM D5185(m)000ManganeseppmASTM D5185(m)0MagnesiumppmASTM D5185(m)999CalciumppmASTM D5185(m)311430233046PhosphorusppmASTM D5185(m)109910331023ZincppmASTM D5185(m)708685868901LithiumppmASTM D5185(m)7086s5868901SoliconppmASTM D5185(m)>10044SodiumppmASTM D5185(m)>10044		Vanadium	ppm	ASTM D5185(m)		0	0	
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)245BariumppmASTM D5185(m)066MolybdenumppmASTM D5185(m)000ManganeseppmASTM D5185(m)0<1<1MagnesiumppmASTM D5185(m)999CalciumppmASTM D5185(m)311430233046PhosphorusppmASTM D5185(m)124512131212ZincppmASTM D5185(m)708685868901LithiumppmASTM D5185(m)708685868901SulfurppmASTM D5185(m)708644SodiumppmASTM D5185(m)>10044		Beryllium	ppm	ASTM D5185(m)		0	0	
Boron ppm ASTM D5185(m) 2 4 5 Barium ppm ASTM D5185(m) 0 6 6 Molybdenum ppm ASTM D5185(m) 0 0 0 Manganese ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 0 Magnesium ppm ASTM D5185(m) 9 9 9 Calcium ppm ASTM D5185(m) 3114 3023 3046 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm <th></th> <th>Cadmium</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th></th> <th>0</th> <th>0</th> <th></th>		Cadmium	ppm	ASTM D5185(m)		0	0	
Barium ppm ASTM D5185(m) 0 6 6 Molybdenum ppm ASTM D5185(m) 0 0 0 Manganese ppm ASTM D5185(m) 0 <1 <1 Magnesium ppm ASTM D5185(m) 9 9 9 Calcium ppm ASTM D5185(m) 3114 3023 3046 Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) 7086 8586 8901 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185(m) 0 6 6 Molybdenum ppm ASTM D5185(m) 0 0 0 Manganese ppm ASTM D5185(m) 0 <1 <1 Magnesium ppm ASTM D5185(m) 9 9 9 Calcium ppm ASTM D5185(m) 3114 3023 3046 Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) 7086 8586 8901 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		Boron	ppm	ASTM D5185(m)	2	4	5	
Manganese ppm ASTM D5185(m) 0 <1		Barium	ppm	ASTM D5185(m)	0	6	6	
Magnesium ppm ASTM D5185(m) 9 9 9 Calcium ppm ASTM D5185(m) 3114 3023 3046 Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) <1 <1 Solicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		Molybdenum	ppm	ASTM D5185(m)	0	0	0	
Calcium ppm ASTM D5185(m) 3114 3023 3046 Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) Current history1 history2 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		Manganese		ASTM D5185(m)	0	<1	<1	
Calcium ppm ASTM D5185(m) 3114 3023 3046 Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) Current history1 history2 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		Magnesium	ppm	ASTM D5185(m)	9	9	9	
Phosphorus ppm ASTM D5185(m) 1099 1033 1023 Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) 7086 8586 8901 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		-		ASTM D5185(m)	3114			
Zinc ppm ASTM D5185(m) 1245 1213 1212 Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) 7086 ethod current history1 history2 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) >100 4 4		Phosphorus		ASTM D5185(m)	1099	1033	1023	
Sulfur ppm ASTM D5185(m) 7086 8586 8901 Lithium ppm ASTM D5185(m) 7086 8586 8901 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) Contract 4				ASTM D5185(m)	1245	1213	1212	
LithiumppmASTM D5185(m)<1		Sulfur		. ,			8901	
Silicon ppm ASTM D5185(m) >100 4 4 Sodium ppm ASTM D5185(m) 4 4		Lithium		ASTM D5185(m)			<1	
Sodium ppm ASTM D5185(m) 4 4		CONTAMINANTS	5	method	limit/base	current	history1	history2
Sodium ppm ASTM D5185(m) 4 4		Silicon	mqa	ASTM D5185(m)	>100	4	4	
		Potassium	ppm	()	>20	<1	<1	



OIL ANALYSIS REPORT



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	
Precipitate	scalar	Visual*	NONE	NONE	NONE	
	scalar	Visual*	NONE	NONE	NONE	
		Visual*				
			2.2			
						history2
				195		
SAMPLE IMAGES	5	method	limit/base	current	history1	history2
Color						no image
Bottom						no image
GRAPHS						
Iron (ppm)			30	Lead (ppm)		
				4		
			^{لط} 10	Abnormal		
			0			
±12/23			ec7/23	±12/23		Dec7///3
) (m)	
60 T Severe			10		, , , , , , , , , , , , , , , , , , , ,	
40 Abnormal			E	Severe		
20 -			d 9	Abnormal		
			0	~		~
t12/2			ec7/2:	t12/2		Dec7/73
0			ā			<u> </u>
Copper (ppm)			200			
T.						
00 - Abnormal			<u>특</u> 100	Abnormal		
			0			
2/23			3/23	2/23		Dec7/23
0ct1			Dec	Oct1		Dec
Viscosity @ 40°C				Additives		
Abnormal			4000		1	
250 Abnormal Base			8000 E 2000	calcium phosphorus	3	
Abnormal			2000	sussesses Zinc		
50			1000	0ct12/23		Dec7/23
0ct12/23						
	Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water FLUID PROPERT Visc @ 40°C SAMPLE IMAGES Color Bottom GRAPHS Iron (ppm) Severe Abnormal Copper (ppm) Severe Debris Copper (ppm) Severe Debris Debris Copper (ppm) Severe Debris	Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar FLUID PROPERTIES Visc @ 40°C cSt SAMPLE IMAGES Color Bottom GRAPHS Iron (ppm) Severe Abnormal Copper (ppm) Severe Debris scalar Copper (ppm) Severe Debris scalar Copper (ppm) Severe Debris scalar Stalar Sca	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* FLUID PROPERTIES method Visc @ 40°C cSt ASTM D7279(m) SAMPLE IMAGES method Color Bottom GRAPHS Iron (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Abnormal Copper (ppm) Severe Copper (ppm) Copper (ppm) Severe Copper (ppm) Copper (ppm)	Silt scalar Visual* NONE Debris scalar Visual* NONE Sand/Dirt scalar Visual* NORML Appearance scalar Visual* NORML Odor scalar Visual* NORML Emulsified Water scalar Visual* >.2 Free Water scalar Visual* Sca	Silt scalar Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORML NORML Cdor scalar Visual* NORML NORML Emulsified Water scalar Visual* >.2 NEG Free Water scalar Visual* >.2 NEG Free Water scalar Visual* Scalar Visual* NORML Visc @ 40°C cSt ASTM D7279(m) 213.9 195 SAMPLE IMAGES method imit/base current Color GRAPHS Iron (ppm) GRAPHS Iron (ppm) Gramma Aluminum (ppm) Copper (ppm) Co	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 MORML NORML NORML MORML NORM NORML NORML NORML NORML NORML NORML NORML NORML NORML NORML NORML NORM NORML NORML NORM NORML NORM NORML NORM NORM NORM NORM NORML NORM