

# **OIL ANALYSIS REPORT**

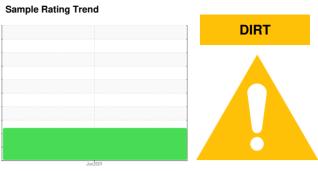




# **MINING** ME-015 CATERPILLAR 773G JWS00457

Hydraulic System

SHELL Spirax S4 CX 10W (--- GAL)



### **DIAGNOSIS**

#### Recommendation

We advise that you check all areas where dirt can enter the system. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

#### Wear

All component wear rates are normal.

#### Contamination

There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. High concentration of dirt present in the oil.

## **Fluid Condition**

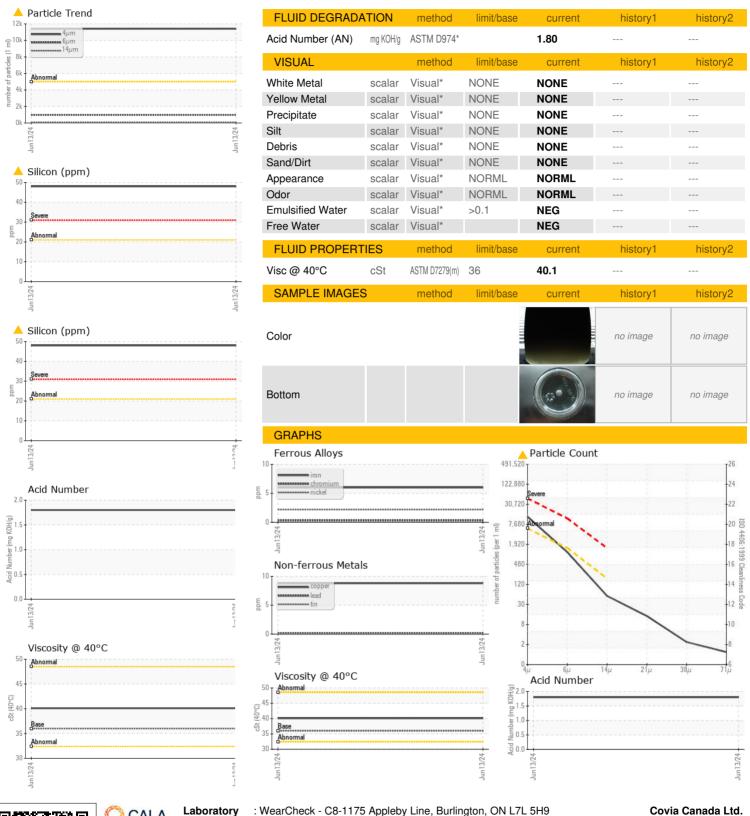
The AN level is acceptable for this fluid.

SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Date         Client Info         WC0941663             Oil Age         hrs         Client Info         6156             Oil Changed         Client Info         6156             Oil Changed         Client Info         Not Changd             Sample Status         Monthload              CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG             WARA METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTMOSISM         >26         6             Iron         ppm         ASTMOSISM         >26         6             Iron         ppm         ASTMOSISM         >10         2             Iron         ppm         ASTMOSISM         >11	UVV ( GAL)						
Sample Date   Client Info   6156	SAMPLE INFORMA	ATION	method	limit/base	current	history1	history2
Sample Date   Client Info   6156	Sample Number		Client Info		WC0941663		
Oil Age         hrs         Client Info         6156			Client Info		13 Jun 2024		
Cilient Info   ABNORMAL   Cilient Info   ABNORMAL   Control   Control	Machine Age	hrs	Client Info		6156		
CONTAMINATION   method   limit/base   current   history1   history2	Oil Age	hrs	Client Info		6156		
CONTAMINATION   method   limit/base   current   history1   history2	Oil Changed		Client Info		Not Changd		
Water         WC Method         >0.1         NEG            WEAR METALS         method         limil/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >226         6             Chromium         ppm         ASTM D5185(m)         >5         <1             Nickel         ppm         ASTM D5185(m)         >10         2             Silver         ppm         ASTM D5185(m)         >10              Aluminum         ppm         ASTM D5185(m)         >10         <1             Aluminum         ppm         ASTM D5185(m)         >10         <1             Aluminum         ppm         ASTM D5185(m)         >10         <             Copper         ppm         ASTM D5185(m)         10         0             Antimony         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0 <td>Sample Status</td> <td></td> <td></td> <td></td> <td>ABNORMAL</td> <td></td> <td></td>	Sample Status				ABNORMAL		
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >26         6	CONTAMINATION		method	limit/base	current	history1	history2
Iron	Water		WC Method	>0.1	NEG		
Chromium	WEAR METALS		method	limit/base	current	history1	history2
Nickel   ppm   ASTM D5185(m)   >10   2         Titanium   ppm   ASTM D5185(m)   <1         Silver   ppm   ASTM D5185(m)   0         Aluminum   ppm   ASTM D5185(m)   >10   <1         Copper   ppm   ASTM D5185(m)   >10   <1         Copper   ppm   ASTM D5185(m)   >10   0         Copper   ppm   ASTM D5185(m)   >31   9         Tin   ppm   ASTM D5185(m)   >10   0         Antimony   ppm   ASTM D5185(m)   0   0         Antimony   ppm   ASTM D5185(m)   0         Beryllium   ppm   ASTM D5185(m)   0         Beryllium   ppm   ASTM D5185(m)   0         Cadmium   ppm   ASTM D5185(m)   0         ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185(m)   <1         Molybdenum   ppm   ASTM D5185(m)   <1         Manganese   ppm   ASTM D5185(m)   0         Calcium   ppm   ASTM D5185(m)   16         Calcium   ppm   ASTM D5185(m)   31114         Phosphorus   ppm   ASTM D5185(m)   31114         Cultir   ppm   ASTM D5185(m)   4411         CONTAMINANTS   method   limit/base   current   history1   history2     Sodium   ppm   ASTM D5185(m)   3         CONTAMINANTS   method   limit/base   current   history1   history2     FLUID CLEANLINESS   method   limit/base   current   history1   history2     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >6µm   ASTM D7647   >100   48         Particles >71µm   ASTM D7647   >100   2         Oil Cleanliness   ISO 4406 (c) >19/17/14   21/17/13	Iron	ppm	ASTM D5185(m)	>26	6		
Titanium ppm ASTM D5185(m)	Chromium	ppm	ASTM D5185(m)	>5	<1		
Silver	Nickel	ppm	ASTM D5185(m)	>10	2		
Aluminum	Titanium	ppm	ASTM D5185(m)		<1		
Lead	Silver	ppm	ASTM D5185(m)		0		
Copper         ppm         ASTM D5185(m)         >31         9             Tin         ppm         ASTM D5185(m)         >10         0             Antimony         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2             Barium         ppm         ASTM D5185(m)         <1	Aluminum	ppm	ASTM D5185(m)	>11	3		
Tin ppm ASTM D5185(m) >10 0	Lead	ppm	ASTM D5185(m)	>10	<1		
Antimony	Copper	ppm	ASTM D5185(m)	>31	9		
Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2             Barium         ppm         ASTM D5185(m)         <1             Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         3114             Calcium         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         4144             Sulfur         ppm         ASTM D5185(m)         <1             CONTAMINANTS         method         limit/base         current <th< td=""><td>Tin</td><td>ppm</td><td>ASTM D5185(m)</td><td>&gt;10</td><td>0</td><td></td><td></td></th<>	Tin	ppm	ASTM D5185(m)	>10	0		
Beryllium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2             Barium         ppm         ASTM D5185(m)         <1             Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         16             Calcium         ppm         ASTM D5185(m)         3114             Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         4414             Sulfur         ppm         ASTM D5185(m)         <1             CONTAMINANTS         method         limit/base         current         <	Antimony	ppm	ASTM D5185(m)		0		
Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2             Barium         ppm         ASTM D5185(m)         <1	Vanadium	ppm	ASTM D5185(m)		0		
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         2             Barium         ppm         ASTM D5185(m)         <1	Beryllium	ppm	ASTM D5185(m)		0		
Boron ppm ASTM D5185(m) 2	Cadmium	ppm	ASTM D5185(m)		0		
Barium         ppm         ASTM D5185(m)         <1             Molybdenum         ppm         ASTM D5185(m)         <1             Manganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         3114             Calcium         ppm         ASTM D5185(m)         998             Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         4414             Sulfur         ppm         ASTM D5185(m)         <1             Lithium         ppm         ASTM D5185(m)         <21         48             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >21         48             Sodium         ppm         ASTM D5185(m)         >20         5             FLUID CLEANLINESS <td< th=""><th>ADDITIVES</th><th></th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td<>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         <1	Boron	ppm	ASTM D5185(m)		2		
Manganese         ppm         ASTM D5185(m)         16             Calcium         ppm         ASTM D5185(m)         3114             Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         1144             Sulfur         ppm         ASTM D5185(m)         4414             Lithium         ppm         ASTM D5185(m)         <1	Barium	ppm	ASTM D5185(m)		<1		
Magnesium         ppm         ASTM D5185(m)         16             Calcium         ppm         ASTM D5185(m)         3114             Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         1144             Sulfur         ppm         ASTM D5185(m)         4414             Lithium         ppm         ASTM D5185(m)         <1	Molybdenum	ppm	ASTM D5185(m)		<1		
Calcium         ppm         ASTM D5185(m)         3114             Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         1144             Sulfur         ppm         ASTM D5185(m)         4414             Lithium         ppm         ASTM D5185(m)         <1	Manganese	ppm	ASTM D5185(m)		0		
Phosphorus         ppm         ASTM D5185(m)         998             Zinc         ppm         ASTM D5185(m)         1144             Sulfur         ppm         ASTM D5185(m)         4414             Lithium         ppm         ASTM D5185(m)         <1	Magnesium	ppm	ASTM D5185(m)		16		
Zinc         ppm         ASTM D5185(m)         1144             Sulfur         ppm         ASTM D5185(m)         4414             Lithium         ppm         ASTM D5185(m)         <1	Calcium	ppm	ASTM D5185(m)		3114		
Sulfur ppm ASTM D5185(m) 4414	Phosphorus	ppm	ASTM D5185(m)		998		
Lithium ppm ASTM D5185(m) <1  CONTAMINANTS method limit/base current history1 history2  Silicon ppm ASTM D5185(m) >21	Zinc	ppm	ASTM D5185(m)		1144		
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >21         ▲ 48             Sodium         ppm         ASTM D5185(m)         >20         5             Potassium         ppm         ASTM D5185(m)         >20         5             FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         11405             Particles >6μm         ASTM D7647         >1300         985             Particles >14μm         ASTM D7647         >40         12             Particles >21μm         ASTM D7647         >40         12             Particles >71μm         ASTM D7647         >3         1             Oil Cleanliness         ISO 4406 (c)         >19/17/14         21/17/13	Sulfur	ppm	ASTM D5185(m)		4414		
Silicon       ppm       ASTM D5185(m)       >21       ▲ 48           Sodium       ppm       ASTM D5185(m)       3           Potassium       ppm       ASTM D5185(m)       >20       5           FLUID CLEANLINESS       method       limit/base       current       history1       history2         Particles >4μm       ASTM D7647       >5000       ▲ 11405           Particles >6μm       ASTM D7647       >1300       985           Particles >14μm       ASTM D7647       >160       48           Particles >21μm       ASTM D7647       >40       12           Particles >38μm       ASTM D7647       >3       1           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14       Δ1/17/13							
Sodium         ppm         ASTM D5185(m)         3             Potassium         ppm         ASTM D5185(m)         >20         5             FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         ▲ 11405             Particles >6μm         ASTM D7647         >1300         985             Particles >14μm         ASTM D7647         >160         48             Particles >21μm         ASTM D7647         >40         12             Particles >38μm         ASTM D7647         >10         2             Particles >71μm         ASTM D7647         >3         1             Oil Cleanliness         ISO 4406 (c)         >19/17/14         21/17/13	Lithium	ppm	ASTM D5185(m)		<1		
Potassium         ppm         ASTM D5185(m)         >20         5             FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         11405             Particles >6μm         ASTM D7647         >1300         985             Particles >14μm         ASTM D7647         >160         48             Particles >21μm         ASTM D7647         >40         12             Particles >38μm         ASTM D7647         >10         2             Particles >71μm         ASTM D7647         >3         1             Oil Cleanliness         ISO 4406 (c)         >19/17/14         21/17/13	'	ppm		limit/base		history1	history2
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         ▲ 11405             Particles >6μm         ASTM D7647         >1300         985             Particles >14μm         ASTM D7647         >160         48             Particles >21μm         ASTM D7647         >40         12             Particles >38μm         ASTM D7647         >10         2             Particles >71μm         ASTM D7647         >3         1             Oil Cleanliness         ISO 4406 (c)         >19/17/14         21/17/13	CONTAMINANTS		method		current		
Particles >4μm       ASTM D7647       >5000       ▲ 11405           Particles >6μm       ASTM D7647       >1300       985           Particles >14μm       ASTM D7647       >160       48           Particles >21μm       ASTM D7647       >40       12           Particles >38μm       ASTM D7647       >10       2           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14       ▲ 21/17/13	CONTAMINANTS Silicon	ppm	method ASTM D5185(m)		current  48		
Particles >6μm       ASTM D7647       >1300       985           Particles >14μm       ASTM D7647       >160       48           Particles >21μm       ASTM D7647       >40       12           Particles >38μm       ASTM D7647       >10       2           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14       Δ 21/17/13	CONTAMINANTS Silicon Sodium	ppm ppm	method ASTM D5185(m) ASTM D5185(m)	>21	current  48 3		
Particles >14μm       ASTM D7647       >160       48           Particles >21μm       ASTM D7647       >40       12           Particles >38μm       ASTM D7647       >10       2           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14       Δ 21/17/13	CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	>21 >20	current  48 3 5	 	 
Particles >21μm       ASTM D7647       >40       12           Particles >38μm       ASTM D7647       >10       2           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14       Δ 21/17/13	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method	>21 >20 limit/base	current  48 3 5 current	  history1	history2
Particles >38μm       ASTM D7647       >10       2           Particles >71μm       ASTM D7647       >3       1           Oil Cleanliness       ISO 4406 (c)       >19/17/14 $\triangle$ 21/17/13	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method ASTM D7647	>21 >20 limit/base >5000	current  ▲ 48 3 5 current  ▲ 11405	history1	history2
Particles >71μm ASTM D7647 >3 <b>1</b> Oil Cleanliness ISO 4406 (c) >19/17/14 ▲ <b>21/17/13</b>	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >6µm	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method ASTM D7647 ASTM D7647	>21 >20 limit/base >5000 >1300	current  ▲ 48 3 5 current  ▲ 11405 985	history1	history2
Oil Cleanliness ISO 4406 (c) >19/17/14 <b>21/17/13</b>	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)  method ASTM D7647 ASTM D7647 ASTM D7647	>21 >20 limit/base >5000 >1300 >160	current  ▲ 48 3 5 current  ▲ 11405 985 48	  history1 	history2
( )	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm	method ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>21 >20 limit/base >5000 >1300 >160 >40	current  ▲ 48 3 5 current  ▲ 11405 985 48 12	  history1 	history2
	CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >6µm Particles >14µm Particles >21µm Particles >38µm	ppm ppm ppm	method  ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)  method  ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>21 >20 limit/base >5000 >1300 >160 >40 >10	current  ▲ 48 3 5  current  ▲ 11405 985 48 12 2	history1	history2

Submitted By: Paul Laneville



## **OIL ANALYSIS REPORT**





CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No.

: WC0941663 Lab Number : 02643407 Unique Number : 5800946

Test Package : CONST

Received : 21 Jun 2024 **Tested** : 24 Jun 2024 Diagnosed : 24 Jun 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.

Covia Canada Ltd.

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T: (705)632-8904

Submitted By: Paul Laneville