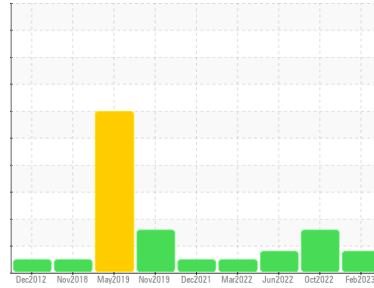




OIL ANALYSIS REPORT

Sample Rating Trend



FUEL



Area
Emergency Diesel Generator
 Machine Id
Emergency Diesel Generator No.1 (S/N Tag No: 00XJA40AG001)
 Component
Diesel Engine
 Fluid
SHELL 15W40 (390 LTR)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Wear

All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.

Contaminants

Light fuel dilution occurring. The water content is negligible. No other contaminants were detected in the oil.

Oil Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	WC	WC	WC
Sample Date	Client Info	28 Feb 2023	26 Oct 2022	22 Jun 2022
Machine Age	hrs	0	0	0
Oil Age	hrs	0	0	0
Oil Changed	Client Info	N/A	N/A	N/A
Sample Status		MARGINAL	ABNORMAL	MARGINAL

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m) >100	10	10	10
Chromium	ppm	ASTM D5185(m) >20	<1	<1	<1
Nickel	ppm	ASTM D5185(m) >4	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	<1	<1	<1
Silver	ppm	ASTM D5185(m) >3	0	▲ 3	0
Aluminum	ppm	ASTM D5185(m) >20	2	2	2
Lead	ppm	ASTM D5185(m) >40	5	7	6
Copper	ppm	ASTM D5185(m) >330	183	181	185
Tin	ppm	ASTM D5185(m) >15	1	1	1
Antimony	ppm	ASTM D5185(m)	<1	<1	0
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)	3	3	3
Barium	ppm	ASTM D5185(m)	5	5	5
Molybdenum	ppm	ASTM D5185(m)	36	37	37
Manganese	ppm	ASTM D5185(m)	2	2	2
Magnesium	ppm	ASTM D5185(m)	493	493	508
Calcium	ppm	ASTM D5185(m)	2285	2275	2268
Phosphorus	ppm	ASTM D5185(m)	1212	1226	1156
Zinc	ppm	ASTM D5185(m)	1333	1342	1361
Sulfur	ppm	ASTM D5185(m)	5788	5854	5929
Lithium	ppm	ASTM D5185(m)	<1	<1	<1

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m) >25	5	4	5
Sodium	ppm	ASTM D5185(m) >150	6	6	6
Potassium	ppm	ASTM D5185(m) >20	1	1	<1
Fuel	%	ASTM D7593* >5	▲ 2.6	▲ 3.6	▲ 3.4
Water	%	ASTM D6304* >0.2	0.066	0.051	0.060
ppm Water	ppm	ASTM D6304* >2000	665.2	512.2	603.5
Glycol	%	ASTM D7922*	0.0	0.0	0.0

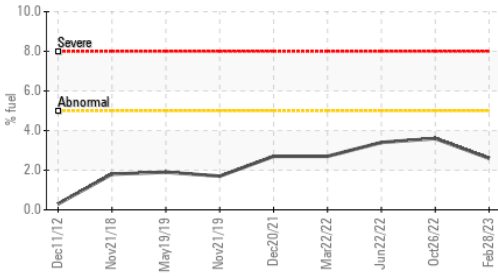
INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844* >3	0	0	0
Nitration	Abs/cm	ASTM D7624* >20	7.3	7.2	4.5
Sulfation	Abs/.1mm	ASTM D7415* >30	19.7	18.3	15.6



OIL ANALYSIS REPORT

▲ Fuel Dilution



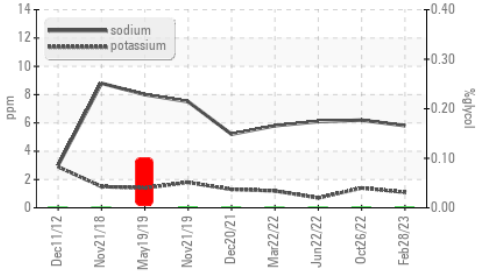
FLUID DEGRADATION	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	ASTM D7414*	>25	10.8	10.9	6.5
Base Number (BN)	mg KOH/g	ASTM D2896*		8.95	9.80	10.03

VISUAL	method	limit/base	current	history1	history2	
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG

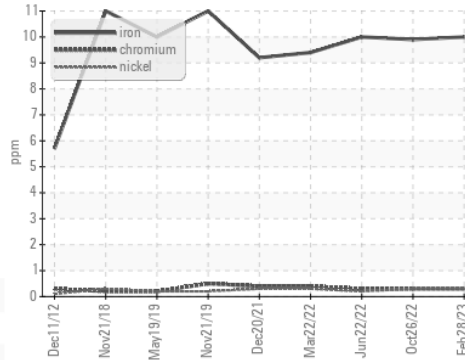
FLUID PROPERTIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D7279(m)		12.6	12.5	12.7

GRAPHS

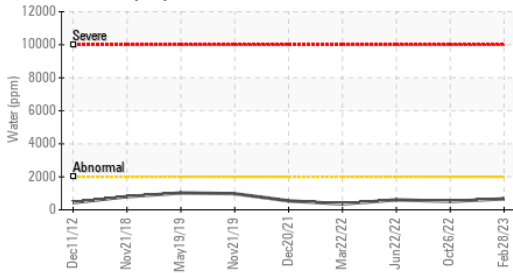
Glycol Contamination



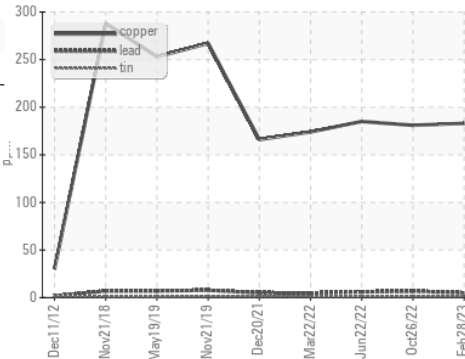
Ferrous Alloys



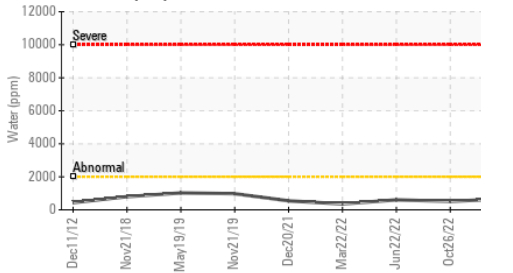
Water (KF)



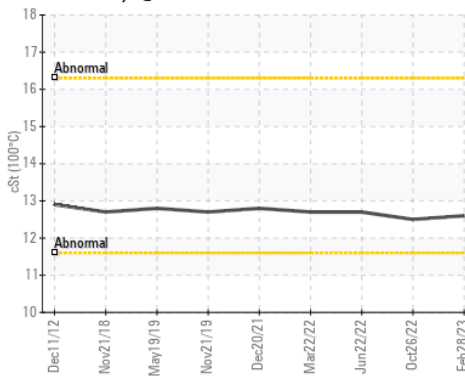
Non-ferrous Metals



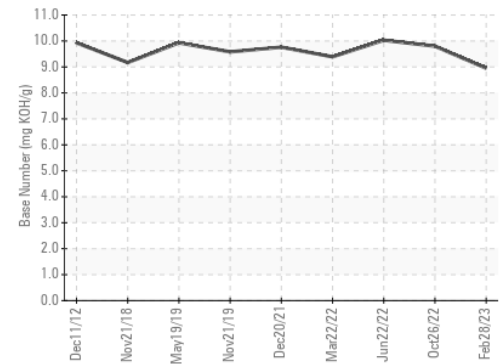
Water (KF)



Viscosity @ 100°C



Base Number



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC
Lab Number : 02545257
Unique Number : 5542262
Test Package : DE TP (Additional Tests: FT-IR, PercentFuel, Spat)

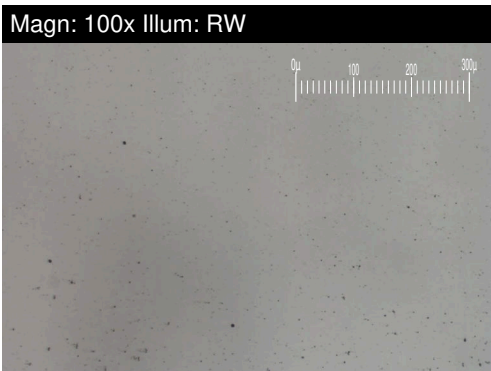
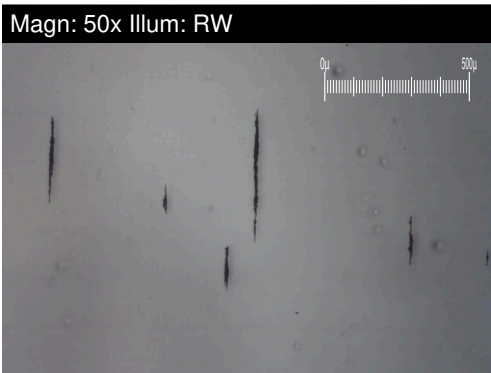
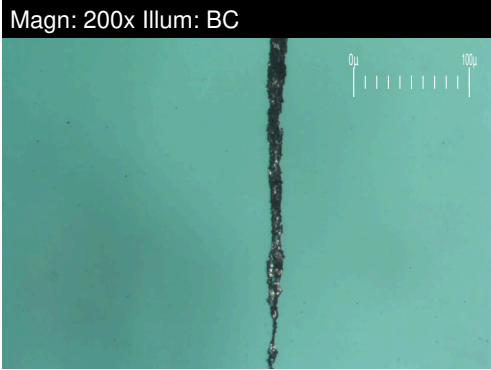
Qatar Aluminium - Qatalum
 C Ring Road
 Doha, ZZ
 QA 23086
 Contact: Elmer Magadia
 Elmer.Magadia@qatalum.com
 T: 9(744)403-1718
 F: 9(743)319-2163

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.



FERROGRAPHY REPORT

Area
Emergency Diesel Generator
 Machine Id
Emergency Diesel Generator No.1 (S/N Tag No: 00XJA40AG001)
 Component
Diesel Engine
 Fluid
SHELL 15W40 (390 LTR)

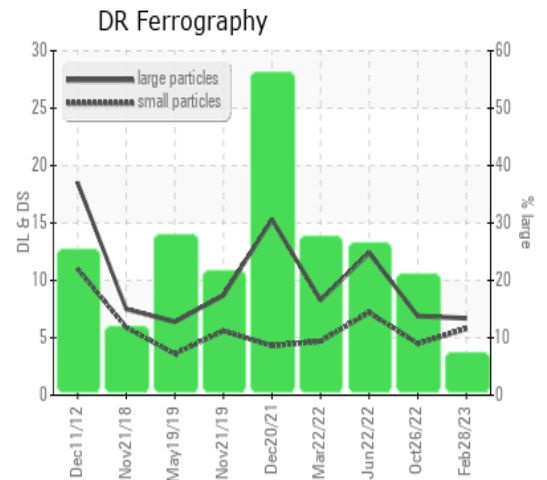


DR-FERROGRAPHY		method	limit/base	current	history1	history2
Large Particles		DR-Ferr*		6.7	6.9	12.4
Small Particles		DR-Ferr*		5.8	4.5	7.2
Total Particles		DR-Ferr*	>---	12.5	11.4	19.6
Large Particles Percentage	%	DR-Ferr*		7.2	21.1	26.5
Severity Index		DR-Ferr*		6	17	64

FERROGRAPHY		method	limit/base	current	history1	history2
Ferrous Rubbing	Scale 0-10	ASTM D7684*		3	3	2
Ferrous Sliding	Scale 0-10	ASTM D7684*		1		
Ferrous Cutting	Scale 0-10	ASTM D7684*				
Ferrous Rolling	Scale 0-10	ASTM D7684*		2	1	1
Ferrous Break-in	Scale 0-10	ASTM D7684*				
Ferrous Spheres	Scale 0-10	ASTM D7684*				
Ferrous Black Oxides	Scale 0-10	ASTM D7684*				
Ferrous Red Oxides	Scale 0-10	ASTM D7684*				
Ferrous Corrosive	Scale 0-10	ASTM D7684*			1	
Ferrous Other	Scale 0-10	ASTM D7684*				
Nonferrous Rubbing	Scale 0-10	ASTM D7684*				
Nonferrous Sliding	Scale 0-10	ASTM D7684*				
Nonferrous Cutting	Scale 0-10	ASTM D7684*				
Nonferrous Rolling	Scale 0-10	ASTM D7684*				
Nonferrous Other	Scale 0-10	ASTM D7684*				
Carbonaceous Material	Scale 0-10	ASTM D7684*		1		
Lubricant Degradation	Scale 0-10	ASTM D7684*				
Sand/Dirt	Scale 0-10	ASTM D7684*		2	1	1
Fibres	Scale 0-10	ASTM D7684*				
Spheres	Scale 0-10	ASTM D7684*				
Other	Scale 0-10	ASTM D7684*			1	1

WEAR

All component wear rates are normal. The direct-reading & analytical ferrographic results are normal indicating no abnormal wear in the system.



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