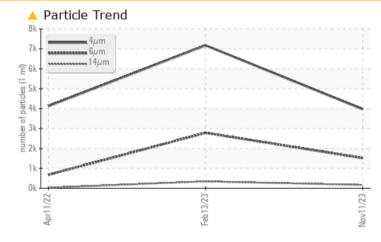




^{Machine Id} 8179962 (S/N 1358) Component

Compressor KAESER SIGMA (OEM) M-460 (--- QTS)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS

Sample Status		ABNORMAL	ABNORMAL	NORMAL
Particles >6µm	ASTM D7647 >1300	🔺 1516	A 2782	674
Particles >14µm	ASTM D7647 >80	🔺 167	4 343	30
Particles >21µm	ASTM D7647 >20	🔺 54	A 76	6
Oil Cleanliness	ISO 4406 (c) >/17/13	3 🔺 19/18/15	🔺 20/19/16	17/12

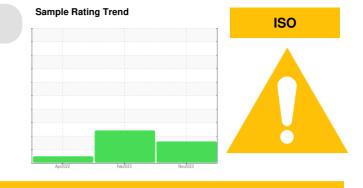
Customer Id: READEN Sample No.: KCPA007117 Lab Number: 06015074 Test Package: IND 2



To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

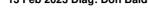
To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com



There are no recommended actions for this sample.

HISTORICAL DIAGNOSIS

13 Feb 2023 Diag: Don Baldridge



Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor. The copper level is abnormal. All other component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend ISO

Machine Id 8179962 (S/N 1358) Component

Compressor Fluid KAESER SIGMA (OEM) M-460 (--- QTS)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a high amount of particulates present in the oil.

Fluid Condition

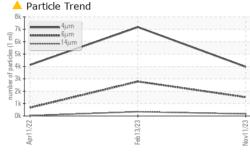
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

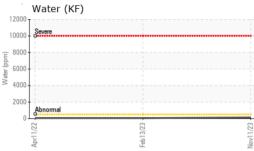
Sample Date Client Info 11 Nov 2023 13 Feb 2023 11 Apr 2022 Machine Age hrs Client Info 11203 7401 2473 Oil Age hrs Client Info N/A Changed Changed Sample Status Imit base Current NIA Changed NORMAL WEAR METALS method Imit base current history1 history2 from ppm ASTM 05185m >3 0 <1 0 Nickel ppm ASTM 05185m >3 0 <1 0 Nickel ppm ASTM 05185m >10 2 <1 <1 Lead ppm ASTM 05185m >10 0 0 <1 0 Vanadium ppm ASTM 05185m >10 0 0 0 0 0 Astm 05185m 0 0 0 0 0 0 0 Vanadium ppm ASTM 05185m 0	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 11203 7401 2473 Oil Age hrs Client Info 0 4000 2473 Oil Ghanged Client Info N/A Changed Changed Changed Sample Status method Imit/base current history1 history2 fron ppm ASTM 05185m >50 0 0 <1 Chromium ppm ASTM 05185m >3 0 <1 0 Silver ppm ASTM 05185m >3 0 <1 0 Silver ppm ASTM 05185m >10 0 0 <1 Copper ppm ASTM 05185m >10 0 <1 0 Vanadium ppm ASTM 05185m 0 0 0 0 Capper ppm ASTM 05185m 0 0 0 0 Barium ppm ASTM 05185m 0 0 0 0	Sample Number		Client Info		KCPA007117	KCP55385	KC103884
Oil Age hrs Client Info 0 4000 2473 Oil Changed Client Info N/A Changed Changed Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 <1 0 Nickel ppm ASTM D5185m >3 0 <1 0 0 Silver ppm ASTM D5185m >3 0 <1 0 0 Silver ppm ASTM D5185m >10 0 0 <1 0 Copper ppm ASTM D5185m >10 0 <1 0 0 Vanadium ppm ASTM D5185m >10 0 <1 0 0 ASTM D5185m >10 0 <1 0 0 0 0 ASTM D5185m 0 <1 0 0 0 0 0 0 0 0	Sample Date		Client Info		11 Nov 2023	13 Feb 2023	11 Apr 2022
Oil Changed Client Info NA Changed Changed Sample Status Image ABNORMAL ABNORMAL NORMAL WEAR METALS method limit/base current history2 Iron ppm ASTM D5185n >50 0 0 <1 Othromium ppm ASTM D5185n >3 0 <1 0 Nickel ppm ASTM D5185n >3 0 <1 0 Nickel ppm ASTM D5185n >3 <1 0 0 Silver ppm ASTM D5185n >10 2 <1 <1 Lead ppm ASTM D5185n >10 0 0 <1 0 Cadmium ppm ASTM D5185n >10 0 0 0 0 ADDITIVES method limit/base current history1 history2 Baron ppm ASTM D5185n 0 0 0 0 0 Addotenum ppm ASTM D5185n 0 0 0 2 <th>Machine Age</th> <td>hrs</td> <td>Client Info</td> <td></td> <th>11203</th> <td>7401</td> <td>2473</td>	Machine Age	hrs	Client Info		11203	7401	2473
Sample Status method Imit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 <1 Chromium ppm ASTM D5185m >50 0 0 <1 Nickel ppm ASTM D5185m >3 0 <1 0 Titanium ppm ASTM D5185m >3 1 0 0 Silver ppm ASTM D5185m >3 <1 0 0 Copper ppm ASTM D5185m >10 0 0 <1 0 Vanadium ppm ASTM D5185m >10 0 0 <1 0 0 Adamium ppm ASTM D5185m >10 0	Oil Age	hrs	Client Info		0	4000	2473
WEAR METALS method limit/base current history1 history2 tron ppm ASTM 05185n >50 0 0 <1 Chromium ppm ASTM 05185n >50 0 0 <1 Nickel ppm ASTM 05185n >3 0 <1 0 Silver ppm ASTM 05185n >2 0 0 0 Auminum ppm ASTM 05185n >10 2 <1 <1 Lead ppm ASTM 05185n >10 0 <1 0 Copper ppm ASTM 05185n >10 0 <1 0 Vanadium ppm ASTM 05185n >10 0 <1 0 ASTM 05185n >10 0 0 0 0 0 ASTM 05185n 0 0 0 0 0 0 ASTM 05185n 0 0 0 0 0 0	Oil Changed		Client Info		N/A	Changed	Changed
ron ppm ASTM D5185m >50 0 0 <1	Sample Status				ABNORMAL	ABNORMAL	NORMAL
Chromium ppm ASTM D5185m >10 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >3 0 <1	Iron	ppm	ASTM D5185m	>50	0	0	<1
Titanium ppm ASTM D5185m >3 <1	Chromium	ppm	ASTM D5185m	>10	<1	0	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >10 2 <1 <1 Lead ppm ASTM D5185m >10 0 0 <1 Copper ppm ASTM D5185m >50 30 ▲ 68 8 Tin ppm ASTM D5185m >10 0 <1 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 <1 0 0 Maganese ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 <1 3 7	Nickel	ppm	ASTM D5185m	>3	0	<1	0
Aluminum ppm ASTM D5185m >10 2 <1	Titanium	ppm	ASTM D5185m	>3	<1	0	0
Lead ppm ASTM D5185m >10 0 0 <1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >50 30 ▲ 68 8 Tin ppm ASTM D5185m >10 0 <1 0 Vanadium ppm ASTM D5185m <1 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 <1 0 0 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 3 7 Calcium ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 <1 3 7 Sulfur ppm ASTM D5185m 23500 15631 14691	Aluminum	ppm	ASTM D5185m	>10	2	<1	<1
Tin ppm ASTM D5185m >10 0 <1	Lead	ppm	ASTM D5185m	>10	0	0	<1
Tin ppm ASTM D5185m >10 0 <1	Copper		ASTM D5185m	>50	30	<u> </u>	8
Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 <1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 0 Magnese ppm ASTM D5185m 100 <1 <1 57 Calcium ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 <1 3 7 Sulfur ppm ASTM D5185m 0 <1 8 58 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 0 <1	Tin		ASTM D5185m	>10	0	<1	
Cadmium ppm ASTM D5185m <1	Vanadium		ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 0 0 Barium ppm ASTM D5185m 90 0 2 38 Molybdenum ppm ASTM D5185m 0 <1 0 0 Manganese ppm ASTM D5185m 100 <1 <1 57 Calcium ppm ASTM D5185m 100 <1 <1 57 Calcium ppm ASTM D5185m 0 0 0 2 Phosphorus ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 23500 15631 14691 15858 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D5185m >20 <1 <1 12 Particles >4µm ASTM D6304 >0.05 0.01	Cadmium		ASTM D5185m		<1	0	0
Barium ppm ASTM D5185m 90 0 2 38 Molybdenum ppm ASTM D5185m 0 <1 0 0 Manganese ppm ASTM D5185m 0 <1 0 0 Magnesium ppm ASTM D5185m 100 <1 <1 57 Calcium ppm ASTM D5185m 0 0 0 0 2 Phosphorus ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 0 <1 8 Sulfur ppm ASTM D5185m 23500 15631 14691 15858 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D5185m >20 <1 <1 12 Water % ASTM D6304 >500	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 <1	Boron	ppm	ASTM D5185m	0	0	0	0
Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 100 <1 <1 57 Calcium ppm ASTM D5185m 0 0 0 2 Phosphorus ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 0 <1 8 Sulfur ppm ASTM D5185m 23500 15631 14691 15858 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 0 <1 Sodium ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D6304 >0.05 0.013 0.005 0.005 ppm Water ppm ASTM D7647 3968 7174 4122 Particles >4µm ASTM D7647 1300 1516 2782	Barium	ppm	ASTM D5185m	90	0	2	38
Magnesium ppm ASTM D5185m 100 <1	Molybdenum	ppm	ASTM D5185m	0	<1	0	0
Calcium ppm ASTM D5185m 0 0 0 2 Phosphorus ppm ASTM D5185m 0 <1 3 7 Zinc ppm ASTM D5185m 0 0 <1 8 Sulfur ppm ASTM D5185m 23500 15631 14691 15858 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 0 <1 Sodium ppm ASTM D5185m >25 <1 0 <1 Sodium ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D5185m >20 <1 <1 12 Water ppm ASTM D5185m >20 <1 <1 12 Particles >4µm ASTM D5604 >0.05 0.013 0.005 0.005 ppm ASTM D7647 3968 7174 4122 <th>Manganese</th> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>0</th> <td>0</td> <td>0</td>	Manganese	ppm	ASTM D5185m		0	0	0
Phosphorus ppm ASTM D5185m 0 <1	Magnesium	ppm	ASTM D5185m	100	<1	<1	57
Zinc ppm ASTM D5185m 0 0 <1	Calcium	ppm	ASTM D5185m	0	0	0	2
Sulfur ppm ASTM D5185m 23500 15631 14691 15858 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1	Phosphorus	ppm	ASTM D5185m	0	<1	3	7
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 <1 0 <1 Sodium ppm ASTM D5185m >25 <1 0 15 Potassium ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D6304 >0.05 0.013 0.005 0.005 ppm Water ppm ASTM D6304 >500 138 54.7 58.9 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 3968 7174 4122 Particles >6µm ASTM D7647 >1300 1516 2782 674 Particles >1µm ASTM D7647 >20 54 76 6 Particles >21µm ASTM D7647 >20 54 76 6 Particles >71µm ASTM D7647 3 0 0 0 0	Zinc	ppm	ASTM D5185m	0	0	<1	8
Silicon ppm ASTM D5185m >25 <1	Sulfur	ppm	ASTM D5185m	23500	15631	14691	15858
Sodium ppm ASTM D5185m 0 0 15 Potassium ppm ASTM D5185m >20 <1 <1 12 Water % ASTM D6304 >0.05 0.013 0.005 0.005 ppm Water ppm ASTM D6304 >500 138 54.7 58.9 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 3968 7174 4122 Particles >6µm ASTM D7647 >1300 1516 2782 674 Particles >14µm ASTM D7647 >80 167 343 30 Particles >14µm ASTM D7647 >20 54 76 6 Particles >38µm ASTM D7647 >3 0 0 0 Particles >71µm ASTM D7647 >3 0 0 0 0 Oli Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1	Silicon	ppm	ASTM D5185m	>25	<1	0	<1
Water % ASTM D6304 >0.05 0.013 0.005 0.005 ppm Water ppm ASTM D6304 >500 138 54.7 58.9 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 3968 7174 4122 Particles >6µm ASTM D7647 >1300 1516 2782 674 Particles >14µm ASTM D7647 >80 167 343 30 Particles >21µm ASTM D7647 >20 54 76 6 Particles >38µm ASTM D7647 >4 2 4 0 Particles >71µm ASTM D7647 >3 0 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	0	15
ppm Water ppm ASTM D6304 >500 138 54.7 58.9 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 3968 7174 4122 Particles >6µm ASTM D7647 >1300 1516 2782 674 Particles >14µm ASTM D7647 >80 167 343 30 Particles >14µm ASTM D7647 >20 54 76 6 Particles >21µm ASTM D7647 >20 54 76 6 Particles >38µm ASTM D7647 >4 2 4 0 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) /17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	<1	<1	12
FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 3968 7174 4122 Particles >6µm ASTM D7647 >1300 1516 2782 674 Particles >14µm ASTM D7647 >80 167 343 30 Particles >21µm ASTM D7647 >20 54 76 6 Particles >38µm ASTM D7647 >4 2 4 0 Particles >71µm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Water	%	ASTM D6304	>0.05	0.013	0.005	0.005
Particles >4μm ASTM D7647 3968 7174 4122 Particles >6μm ASTM D7647 >1300 1516 2782 674 Particles >14μm ASTM D7647 >80 167 343 30 Particles >14μm ASTM D7647 >20 54 76 6 Particles >21μm ASTM D7647 >20 54 76 6 Particles >38μm ASTM D7647 >4 2 4 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	ppm Water	ppm	ASTM D6304	>500	138	54.7	58.9
Particles >6μm ASTM D7647 >1300 1516 2782 674 Particles >14μm ASTM D7647 >80 167 343 30 Particles >21μm ASTM D7647 >20 54 76 6 Particles >38μm ASTM D7647 >4 2 4 0 Particles >38μm ASTM D7647 >3 0 0 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >80 ▲ 167 ▲ 343 30 Particles >21μm ASTM D7647 >20 ▲ 54 76 6 Particles >38μm ASTM D7647 >4 2 4 0 Particles >38μm ASTM D7647 >4 2 4 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 19/18/15 ▲ 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm						
Particles >21μm ASTM D7647 >20 54 76 6 Particles >38μm ASTM D7647 >4 2 4 0 Particles >37μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>1300		<u> </u>	674
Particles >38μm ASTM D7647 >4 2 4 0 Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm						
Particles >71μm ASTM D7647 >3 0 0 0 Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>20	<u> </u>	<u>▲</u> 76	6
Oil Cleanliness ISO 4406 (c) >/17/13 19/18/15 20/19/16 17/12 FLUID DEGRADATION method limit/base current history1 history2	Particles >38µm				2	4	0
FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm		ASTM D7647	>3	0	0	0
	Oil Cleanliness		ISO 4406 (c)	>/17/13	 19/18/15	2 0/19/16	17/12
Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.42 0.40 0.40	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.42	0.40	0.40

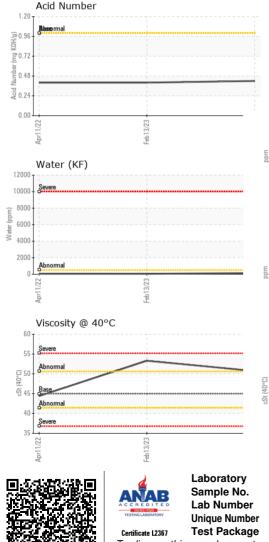
L L COMPRESSOR

Built for a lifetime.

OIL ANALYSIS REPORT

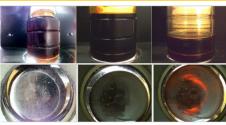




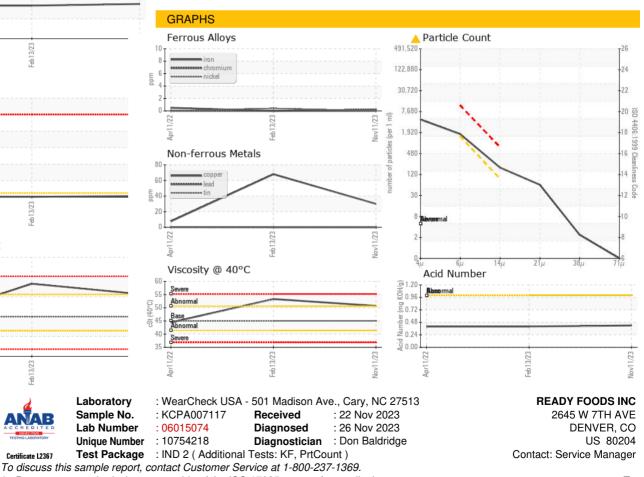


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	45	50.7	53.3	44.4
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
				-6-		

Color



Bottom



* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: Service Manager - READEN