

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

U-10 (S/N 192-517) Hydraulic System Fluid CHEVRON RANDO HD 46 (40 GAL)

DIAGNOSIS

A Recommendation

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

📥 Wear

The copper level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

Fluid Condition

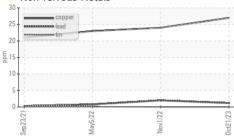
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service. Color is L3.0.

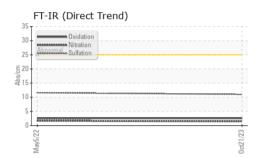
Sample NumberClient InfoWC0792218WC0753768WC0625141Sample DateIClient Info21 Oct 202301 Nov 202205 May 2022Machine AgehrsClient Info000Oil AgeFrsClient Info000Oil ChangedFrsClient InfoN/AN/ANot ChangedSample StatusImageImageCurrentMARGINALMARGINALWEAR METALSmethodImageCurrentMistory1Mistory1IronppmASTM D5185m>2000-1ChromiumppmASTM D5185m>20000NickelppmASTM D5185m>20000NickelppmASTM D5185m>20000AluminumppmASTM D5185m>20000AluminumppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000AntimonyppmASTM D5185m>20000Antimony <th>SAMPLE INFORM</th> <th>IATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 0 0 Oil Age hrs Client Info 0 0 0 Sample Status Client Info N/A N/A N/A Not Changd Sample Status Image current history1 history2 Iron ppm ASTM D5185m >20 0 0 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >20 0 0 <1 Lead ppm ASTM D5185m >20 0 0 <1 Lead ppm ASTM D5185m >20 0 0 <1 Antimony ppm ASTM D5185m >20 0 0 <1 Antimony ppm ASTM D5185m >20 0 0 <1 Antimony	Sample Number		Client Info		WC0792218	WC0753768	WC0625141
Oil Age hrs Client Info 0 0 0 Oil Changed Client Info N/A N/A NA Not Changed Sample Status Imathic Client Info N/A MARGINAL MARGINAL WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >20 0 0 <1	Sample Date		Client Info		21 Oct 2023	01 Nov 2022	05 May 2022
Oil Changed Sample StatusClient InfoN/A ABNORMALN/A MARGINALNot Changed MARGINALWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>2000<1	Machine Age	hrs	Client Info		0	0	0
Sample StatusImage of the termABNORMALMARGINALMARGINALWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m>20000NickelppmASTM D5185m>20000NickelppmASTM D5185m>20000SilverppmASTM D5185m>20000AluminumppmASTM D5185m>20000LeadppmASTM D5185m>2012<1	Oil Age	hrs	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5165m >20 0 0 <1	Oil Changed		Client Info		N/A	N/A	Not Changd
Iron ppm ASTM D5185m >20 0 0 <1 Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >20 1 2 <1	Sample Status				ABNORMAL	MARGINAL	MARGINAL
Chromium ppm ASTM D5185m >20 0 0 0 Nickel ppm ASTM D5185m >20 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m >20 1 2 <1 Copper ppm ASTM D5185m >20 1 2 <1 Copper ppm ASTM D5185m >20 0 0 <1 Antimony ppm ASTM D5185m >20 0 0 <1 Vanadium ppm ASTM D5185m >20 0 0 0 0 Cadmium ppm ASTM D5185m >0 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0 0 Molybdenum ppm ASTM D5185m 0 1 0 0 0 Marganese ppm ASTM D5185	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >20 0 0 0 Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >20 0 0 0 Aluminum ppm ASTM D5185m >20 1 2 <1	Iron	ppm	ASTM D5185m	>20	0	0	<1
Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >20 0 0 <1	Chromium	ppm	ASTM D5185m	>20	0	0	0
Silver ppm ASTM D5185m >20 0 0 .1 Aluminum ppm ASTM D5185m >20 1 2 .1 Lead ppm ASTM D5185m >20 1 2 .1 Copper ppm ASTM D5185m >20 27 24 .23 Tin ppm ASTM D5185m >20 0 0 .1 Antimony ppm ASTM D5185m >20 0 0 .1 Vanadium ppm ASTM D5185m .20 0 0 .1 Cadmium ppm ASTM D5185m 0 0 0 .1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 .1 Manganese ppm ASTM D5185m 0 1 0 .1 Magnesium ppm ASTM D5185m 152 151 133	Nickel	ppm	ASTM D5185m	>20	0	0	0
Aluminum ppm ASTM D5185m >20 0 0 <1 Lead ppm ASTM D5185m >20 1 2 <1	Titanium	ppm	ASTM D5185m		0	0	0
Lead ppm ASTM D5185m >20 1 2 <1 Copper ppm ASTM D5185m >20 27 24 23 Tin ppm ASTM D5185m >20 0 0 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >20 ▲ 27 ▲ 24 ▲ 23 Tin ppm ASTM D5185m >20 0 0 <1	Aluminum	ppm	ASTM D5185m	>20	0	0	<1
Tin ppm ASTM D5185m >20 0 0 <1 Antimony ppm ASTM D5185m 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 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 152 151 133 179 Sulfur ppm ASTM D5185m 155 1 1	Lead	ppm	ASTM D5185m	>20	1	2	<1
Antimony ppm ASTM D5185m Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnaese ppm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 152 151 133 179 Sulfur ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 21 1 0 Sodium ppm ASTM D5185m	Copper	ppm	ASTM D5185m	>20	<u> </u>	<u> </u>	A 23
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 1 0 0 Manganesium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 1 133 213 214 24 Phosphorus ppm ASTM D5185m 1 172 178 179 Sulfur ppm ASTM D5185m >15 1 1 0	Tin	ppm	ASTM D5185m	>20	0	0	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 0 <11	Antimony	ppm	ASTM D5185m				
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Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 1 0 0 Molybdenum ppm ASTM D5185m 0 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 1 0 0 Molybdenum ppm ASTM D5185m 0 <1 0 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 0 1 0 0 Calcium ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1 <1 1 Water % AS	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 <1 0 Manganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 1 0 Calcium ppm ASTM D5185m 0 1 0 Calcium ppm ASTM D5185m 23 21 24 Phosphorus ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 1772 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1 <1 1 Vater % ASTM D5185m >20 <1 <1 1 Water % ASTM D5185m >0.	Boron	ppm	ASTM D5185m		0	0	0
Maganese pm ASTM D5185m 0 0 0 Magnesium ppm ASTM D5185m 0 1 0 Calcium ppm ASTM D5185m 23 21 24 Phosphorus ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1	Barium	ppm	ASTM D5185m		1	0	0
Magnesium ppm ASTM D5185m 0 1 0 Calcium ppm ASTM D5185m 23 21 24 Phosphorus ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m		0	<1	0
Calcium ppm ASTM D5185m 23 21 24 Phosphorus ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1	Manganese	ppm	ASTM D5185m		0	0	0
Phosphorus ppm ASTM D5185m 152 151 133 Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1 <1 0 Sodium ppm ASTM D6304 >0.05 0.002 Vater % ASTM D6304 >500 15.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	Magnesium	ppm	ASTM D5185m		0	1	0
Zinc ppm ASTM D5185m 172 178 179 Sulfur ppm ASTM D5185m 794 837 716 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m		23	21	24
SulfurppmASTM D5185m794837716CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>15110SodiumppmASTM D5185m>2023<1	Phosphorus	ppm	ASTM D5185m		152	151	133
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >20 2 3 <1	Zinc	ppm	ASTM D5185m		172	178	179
Silicon ppm ASTM D5185m >15 1 1 0 Sodium ppm ASTM D5185m >15 1 1 0 Potassium ppm ASTM D5185m >20 2 3 <1 Potassium ppm ASTM D5185m >20 <1 <1 1 Water % ASTM D6304 >0.05 0.002 ppm Water ppm ASTM D6304 >500 15.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	Sulfur	ppm	ASTM D5185m		794	837	716
Sodium ppm ASTM D5185m 2 3 <1 Potassium ppm ASTM D5185m >20 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 <1 1 Water % ASTM D6304 >0.05 0.002 ppm Water ppm ASTM D6304 >500 15.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	Silicon	ppm	ASTM D5185m	>15	1	1	0
Water % ASTM D6304 >0.05 0.002 ppm Water ppm ASTM D6304 >500 15.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	Sodium	ppm	ASTM D5185m		2	3	<1
ppm Water ppm ASTM D6304 >500 15.1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	Potassium	ppm	ASTM D5185m	>20	<1	<1	1
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D784400NitrationAbs/cm*ASTM D76241.51.7	Water	%	ASTM D6304	>0.05	0.002		
Soot % % *ASTM D7844 0 0 Nitration Abs/cm *ASTM D7624 1.5 1.7	ppm Water	ppm	ASTM D6304	>500	15.1		
Nitration Abs/cm *ASTM D7624 1.5 1.7	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 1.5 1.7	Soot %	%	*ASTM D7844		0		0
		Abs/cm					

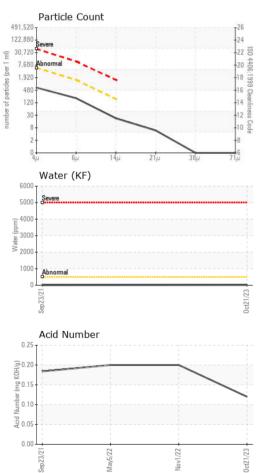


OIL ANALYSIS REPORT









FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>5000	562	430	865
Particles >6µm		ASTM D7647	>1300	175	114	229
Particles >14µm		ASTM D7647	>160	19	15	33
Particles >21µm		ASTM D7647	>40	5	5	7
Particles >38µm		ASTM D7647	>10	0	0	1
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	16/15/11	16/14/11	17/15/12
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		2.6		2.6
Acid Number (AN)	mg KOH/g	ASTM D8045		0.12	0.20	0.20
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	43.7	44.4	44.2	44.1
ASTM Color	scalar	*ASTM D1500		L3.0		L1.5
SAMPLE IMAGES	;	method	limit/base	current	history1	history2
Color						

Bottom



1253.151	d	Laboratory	: WearCheck USA - 501 Madison Ave., Cary, NC 27513			CHUGACH ELECTRIC - SULLIVAN PLANT		
	ANAB	Sample No.	: WC0792218	Received	: 13 Nov 2023	8900 STARVIEW DRIVE		
	ACCREDITED	Lab Number	: 06006316	Tested	: 15 Nov 2023	ANCHORAGE, AK		
	TESTING LABORATORY	Unique Number	: 10740078	Diagnosed	: 30 May 2024 - Doug Bogar	US 99504		
	Certificate L2367	Test Package	: PLANT (Additional Te	ests: Color-ASTN	1, FT-IR)	Contact: JON RIVERA		
	To discuss this sample report, contact Customer Service at 1-800-237-1369. Jon_Rivera@chugachelectric.co							
79月	* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (907)762-7804							
	Statements of	conformity to sp	pecifications are based o	on the simple acc	eptance decision rule (JC	<i>GM 106:2012)</i> F:		

Report Id: CHUANCSP [WUSCAR] 06006316 (Generated: 05/30/2024 21:38:10) Rev: 1

Contact/Location: JON RIVERA - CHUANCSP