

OIL ANALYSIS REPORT

Area **FP-010** Machine Id **B71637 - AUGER KSI #10 (S/N Q183759JP)** Component

Gearbox Fluid

PETRO CANADA SYNDURO SHB ISO 460 (--- GAL)

DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.

Wear

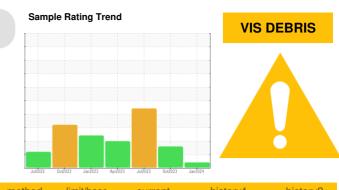
All component wear rates are normal.

Contamination

Moderate concentration of visible dirt/debris present in the oil.

Fluid Condition

The AN level is acceptable for this fluid.

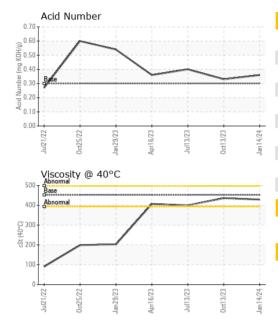


Phosphorus ppm ASTM D5185m 60 71 78 124 Zinc ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 5 8 Sodium ppm ASTM D5185m >50 5 8 Sodium ppm ASTM D5185m >20 0 <11	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age Oil Age Oil Age Oil Age Oil Changed hrs Client Info 0 0 0 Oil Changed Client Info N/A Not Changd N/A Sample Status Client Info N/A ABNORMAL ABNORMAL SEVERE CONTAMINATION method limi/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limi/base current history1 history2 Iron ppm ASTM 05185m >200 19 29 65 Chromium ppm ASTM 05185m >15 0 0 0 Titanium ppm ASTM 05185m >15 0 0 0 Copper ppm ASTM 05185m >200 1 <1 1 Titanium ppm ASTM 05185m >20 0 0 0 Copper ppm ASTM 05185m >20 0 0 0	Sample Number		Client Info		WC0885540	WC0850248	WC0826109
Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A Not Changed N/A Sample Status Imit/base current history1 history2 CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Contramium ppm ASTM D5185m >200 19 29 65 Chromium ppm ASTM D5185m >200 19 29 65 Silver ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m >25 0 0 0 Copper ppm ASTM D5185m >200 1 <1	Sample Date		Client Info		14 Jan 2024	13 Oct 2023	13 Jul 2023
Oli Changed Client Info N/A Nat Changed N/A Sample Status Image Status Image Status ABNORMAL ABNORMAL SEVERE CONTAMINATION method Iimil/base current history1 history2 Water WC Method 0.2 NEG NEG NEG WEAR METALS method Iimil/base current history1 history2 Iron ppm ASTN D5185m >200 19 29 65 Chromium ppm ASTN D5185m >15 0 0 0 Nickel ppm ASTN D5185m >25 0 0 0 Lead ppm ASTN D5185m >200 1 <1	Machine Age	hrs	Client Info		0	0	0
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CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >200 19 29 65 Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >10 0 0 0 Silver ppm ASTM D5185m >200 1 <1	Oil Changed		Client Info		N/A	Not Changd	N/A
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >200 19 29 65 Otromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Aluminum ppm ASTM D5185m >20 0 <1	Sample Status				ABNORMAL	ABNORMAL	SEVERE
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >200 19 29 65 Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m >20 0 <1	CONTAMINATION	N	method	limit/base	current	history1	history2
Iron ppm ASTM D5185m >200 19 29 65 Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >20 0 0 <1 Lead ppm ASTM D5185m >200 1 <1 1 Tin ppm ASTM D5185m >200 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 5.0 <1 0 <1 Magnesium ppm ASTM D5185m 5.0 1 0	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Titanium ppm ASTM D5185m 4 1 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >15 0 0 0 Titanium ppm ASTM D5185m <1	Iron	ppm	ASTM D5185m	>200	19	29	65
Titanium ppm ASTM D5185m <1 <1 <1 Silver ppm ASTM D5185m >25 0 0 0 Aluminum ppm ASTM D5185m >25 0 0 <1	Chromium	ppm	ASTM D5185m	>15	0	0	0
Silver ppm ASTM D5185m >25 0 0 <11 Aluminum ppm ASTM D5185m >200 1 <1	Nickel	ppm	ASTM D5185m	>15	0	0	0
Aluminum ppm ASTM D5185m >25 0 0 <1 Lead ppm ASTM D5185m >100 0 0 0 Copper ppm ASTM D5185m >200 1 <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead ppm ASTM D5185m >100 0 0 0 Copper ppm ASTM D5185m >200 1 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >200 1 <1 1 Tin ppm ASTM D5185m >25 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 <1	Aluminum	ppm	ASTM D5185m	>25	0	0	<1
Tin ppm ASTM D5185m >25 0 0 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 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 5.0 1 0 <11 Phosphorus ppm ASTM D5185m 5.0 1 0 <1 Phosphorus ppm ASTM D5185m 5.0 1 0 <1 Sulfur ppm ASTM D5185m 5.0 0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current	Lead	ppm	ASTM D5185m	>100	0	0	0
Tin ppm ASTM D5185m >25 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 5.0 0 0 0 0 Barium ppm ASTM D5185m 5.0 0 0 0 0 Magnesium ppm ASTM D5185m 5.0 41 0 <1 Phosphorus ppm ASTM D5185m 5.0 1 0 <1 Zinc ppm ASTM D5185m 5.0 1 0 <1 Sulfur ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 5.0 0 <1 2 Sodium ppm ASTM D5185m >20 <t< td=""><td>Copper</td><td>ppm</td><td>ASTM D5185m</td><td>>200</td><th>1</th><td><1</td><td>1</td></t<>	Copper	ppm	ASTM D5185m	>200	1	<1	1
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 5.0 0 0 0 0 Magnesium ppm ASTM D5185m 5.0 41 0 41 Magnesium ppm ASTM D5185m 5.0 41 0 41 Calcium ppm ASTM D5185m 5.0 41 0 41 Phosphorus ppm ASTM D5185m 5.0 1 0 41 Zinc ppm ASTM D5185m 5.0 1 0 41 Silicon ppm ASTM D5185m 5.0 5 8 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >0 41 <th< td=""><td></td><td>ppm</td><td>ASTM D5185m</td><td>>25</td><th>0</th><td>0</td><td>0</td></th<>		ppm	ASTM D5185m	>25	0	0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 5.0 0 0 0 Maganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 5.0 <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 5.0 0 0 0 Molybdenum ppm ASTM D5185m 5.0 0 0 0 Manganese ppm ASTM D5185m 5.0 <1	Cadmium				0	0	0
Barium ppm ASTM D5185m 5.0 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 5.0 <1 0 <1 Magnesium ppm ASTM D5185m 5.0 <1 0 <1 Phosphorus ppm ASTM D5185m 5.0 1 0 <1 Phosphorus ppm ASTM D5185m 5.0 1 0 <1 Sulfur ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m >20 0 <1 0 FLUID CLEANLINESS method limit/base current history	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 5.0 <1	Boron	ppm	ASTM D5185m		0	0	0
Maganese ppm ASTM D5185m <1 0 <1 Magnesium ppm ASTM D5185m 5.0 <1	Barium	ppm	ASTM D5185m	5.0	0	0	0
Magnesium ppm ASTM D5185m 5.0 <1 0 2 Calcium ppm ASTM D5185m 5.0 1 0 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 5.0 1 0 <1 Phosphorus ppm ASTM D5185m 60 71 78 124 Zinc ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m >20 0 <1	Manganese	ppm	ASTM D5185m		<1	0	<1
Phosphorus ppm ASTM D5185m 60 71 78 124 Zinc ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 5 8 Sodium ppm ASTM D5185m >50 5 8 Sodium ppm ASTM D5185m >20 0 <11 2 Potassium ppm ASTM D5185m >20 0 <11 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 4 77185 150855 Particles >6µm ASTM D7647 >2500 4 420 664 Particles >21µm ASTM D7647 >320 3	Magnesium	ppm	ASTM D5185m	5.0	<1	0	2
Zinc ppm ASTM D5185m 5.0 0 0 0 Sulfur ppm ASTM D5185m 1900 2128 2413 3829 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m >20 0 <1	Calcium	ppm	ASTM D5185m	5.0	1	0	<1
SulfurppmASTM D5185m1900212824133829CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>50558SodiumppmASTM D5185m>50558PotassiumppmASTM D5185m>200<1	Phosphorus	ppm	ASTM D5185m	60	71	78	124
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>50558SodiumppmASTM D5185m>500<1	Zinc	ppm	ASTM D5185m	5.0	0	0	0
Silicon ppm ASTM D5185m >50 5 5 8 Sodium ppm ASTM D5185m 0 <1 2 Potassium ppm ASTM D5185m >20 0 <1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 ▲ 77185 150855 Particles >6µm ASTM D7647 >2500 ▲ 12151 € 24576 Particles >14µm ASTM D7647 >320 ▲ 420 ▲ 664 Particles >21µm ASTM D7647 >20 3 4 Particles >38µm ASTM D7647 >20 3 4 Particles >71µm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 4 23/21/16 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Sulfur		ASTM D5185m	1900	2128	2413	3829
Sodium ppm ASTM D5185m 0 <1	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium ppm ASTM D5185m 0 <1 2 Potassium ppm ASTM D5185m >20 0 <1	Silicon	ppm	ASTM D5185m	>50	5	5	8
Potassium ppm ASTM D5185m >20 0 <1 0 FLUID CLEANLINESS method limit/base current history1 history2 Particles >4µm ASTM D7647 >10000 ▲ 77185 150855 Particles >6µm ASTM D7647 >2500 ▲ 12151 ● 24576 Particles >14µm ASTM D7647 >320 ▲ 420 ▲ 664 Particles >21µm ASTM D7647 >80 105 126 Particles >38µm ASTM D7647 >20 3 4 Particles >71µm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 ● 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185m		0	<1	2
Particles >4µm ASTM D7647 >10000 ▲ 77185 150855 Particles >6µm ASTM D7647 >2500 ▲ 12151 ● 24576 Particles >14µm ASTM D7647 >320 ▲ 420 ▲ 664 Particles >21µm ASTM D7647 >80 105 ▲ 126 Particles >38µm ASTM D7647 >20 3 4 Particles >71µm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 ● 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Potassium	ppm	ASTM D5185m	>20	0	<1	0
Particles >6µm ASTM D7647 >2500 ▲ 12151 24576 Particles >14µm ASTM D7647 >320 ▲ 420 ▲ 664 Particles >21µm ASTM D7647 >80 105 ▲ 126 Particles >38µm ASTM D7647 >20 3 4 Particles >38µm ASTM D7647 >20 3 4 Particles >71µm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >320 ▲ 420 ▲ 664 Particles >21μm ASTM D7647 >80 105 ▲ 126 Particles >38μm ASTM D7647 >20 3 4 Particles >71μm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 € 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >4µm		ASTM D7647	>10000		▲ 77185	150855
Particles >21μm ASTM D7647 >80 105 126 Particles >38μm ASTM D7647 >20 3 4 Particles >71μm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 23/21/16 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >6µm		ASTM D7647	>2500		🔺 12151	24576
Particles >38μm ASTM D7647 >20 3 4 Particles >71μm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 ▲ 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >14µm		ASTM D7647	>320		4 20	▲ 664
Particles >71μm ASTM D7647 >4 0 0 Oil Cleanliness ISO 4406 (c) >20/18/15 ▲ 23/21/16 ● 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >21µm		ASTM D7647	>80		105	1 26
Oil Cleanliness ISO 4406 (c) >20/18/15 23/21/16 24/22/17 FLUID DEGRADATION method limit/base current history1 history2	Particles >38µm		ASTM D7647	>20		3	4
Oil Cleanliness ISO 4406 (c) >20/18/15	Particles >71µm		ASTM D7647	>4		0	0
			ISO 4406 (c)	>20/18/15		▲ 23/21/16	• 24/22/17
Acid Number (AN) mg KOH/g ASTM D8045 0.3 0.36 0.33 0.40	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	0.3	0.36	0.33	0.40

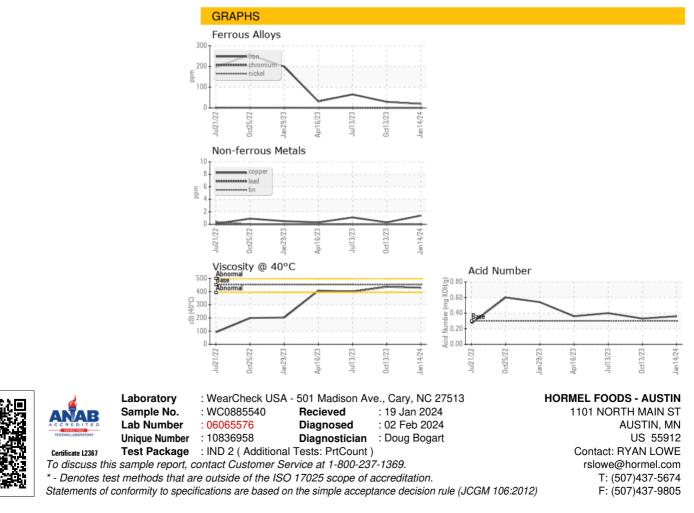
Contact/Location: RYAN LOWE - HORAUS



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	A MODER	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	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
		and a the state	line it /le e e e	ourroot	Intertown of	biotom/0
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	452	429	436	400
	cSt					
Visc @ 40°C	cSt	ASTM D445	452	429	436	400



Contact/Location: RYAN LOWE - HORAUS