

## **OIL ANALYSI**

### Area Fermentation Lightnin FFG30SB01 Seed Ferme Gearbox

Fluid JAX FGG-AW ISO 220 (11 GAL)

#### 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.

#### Contamination

There is a high amount of silt (particulates < 14 microns in size) present in the oil.

#### Fluid Condition

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

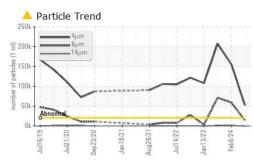
SIS REPC	<b>I N</b>					ISO
montor Adi	totor					
mentor, Agi	lator					
		Jul2019 Jul2	020 Sep2020 Jap2021	Aug2021 Ju/2022 Jan2023	Feb2024	
SAMPLE INFORM	<b>MATION</b>	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0901914	WC0883690	WC0782820
Sample Date		Client Info		09 Jul 2024	06 Feb 2024	06 Jul 2023
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	6	30	32
Chromium	ppm	ASTM D5185m	>15	0	0	<1
Nickel	ppm	ASTM D5185m	>15	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>25	2	7	10
Lead	ppm	ASTM D5185m	>100	0	0	0
Copper	ppm	ASTM D5185m	>200	0	<1	<1
Tin	ppm	ASTM D5185m	>25	0	0	0
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	limit/base	0	3	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	0 0	3 <1	2 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0	3 <1 0	2 0 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0	3 <1 0 <1	2 0 0 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0 2	3 <1 0 <1 6	2 0 0 <1 5
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0 2 204	3 <1 0 <1 6 1093	2 0 0 <1 5 1115
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0 2 204 699	3 <1 0 <1 6 1093 552	2 0 0 <1 5 1115 567
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0 2 204	3 <1 0 <1 6 1093	2 0 0 <1 5 1115
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 0 0 2 204 699 0 815	3 <1 0 <1 6 1093 552 28 1216	2 0 0 <1 5 1115 567 21 1559
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	0 0 0 2 204 699 0 815 current	3 <1 0 <1 6 1093 552 28 1216 history1	2 0 0 <1 5 1115 567 21 1559 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m		0 0 0 2 204 699 0 815 current 2	3 <1 0 <1 6 1093 552 28 1216 history1 8	2 0 0 <1 5 1115 567 21 1559 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	limit/base >50	0 0 0 2 204 699 0 815 current 2 2 <1	3 <1 0 <1 6 1093 552 28 1216 history1 8 <1	2 0 0 <1 5 1115 567 21 1559 history2 6 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >50 >20	0 0 0 2 204 699 0 815 current 2	3 <1 0 <1 6 1093 552 28 1216 history1 8	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m	limit/base >50	0 0 0 2 204 699 0 815 <u>current</u> 2 <1 0	3 <1 0 <1 6 1093 552 28 1216 history1 8 <1 0	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1 <1 0.006
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304	limit/base >50 >20 >0.2 >2000	0 0 0 2 204 699 0 815 <u>current</u> 2 <1 0 0.005 50	3 <1 0 <1 6 1093 552 28 1216 history1 8 <1 0 0.024 241	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1 <1 0.006 61.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304	limit/base >50 >20 >0.2 >2000 limit/base	0 0 0 2 204 699 0 815 current 2 <1 0 0 0.005 50 current	3 <1 0 <1 6 1093 552 28 1216 history1 8 <1 0 0.024 241 history1	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1 0.006 61.7 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304	limit/base >50 >20 >0.2 >2000 limit/base >20000	0 0 0 2 204 699 0 815 0 815 2 2 3 3 1 0 0 0.005 50 0 0.005 50 0 0 0.005	3 <100 <116 6 1093 552 28 1216 history1 8 <100 0.024 241 history1 ▲ 155684	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1 <1 0.006 61.7 history2 k 207795
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647	limit/base >50 >20 >0.2 >2000 limit/base >20000 >5000	0 0 0 2 204 699 0 815 <u>current</u> 2 <1 0 0.005 50 <u>current</u> 50 <u>current</u> 4 14175	3 <100 <116 6 1093 552 28 1216 history1 8 <100 0.024 241 history1 ∧ 155684 ∧ 59120	2 0 0 <1 5 1115 567 21 1559 history2 6 <1 <1 0.006 61.7 history2 0.006 61.7 kistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304 Method ASTM D7647 ASTM D7647 ASTM D7647	limit/base >50 >20 >0.2 >2000 limit/base >20000 >20000 >5000 >5000	0 0 0 2 204 699 0 815 0 815 0 2 <1 0 0.005 50 0 0.005 50 0 0.005 50 2 1 1 1 2 1 2 1 2 1 2 1 0 1 1 2 1 1 2 1 1 1 2 1 1 1 1	3 <100 <1003 552 28 1216 history1 8 <100 0.024 241 history1 ∧ 155684 ∧ 155684 ∧ 59120 ∧ 1000	2 0 0 <1 5 5 1115 567 21 1559 history2 6 <1 <1 <1 0.006 61.7 history2 2 0.006 61.7 ↓
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647	limit/base >50 >20 >0.2 >2000 limit/base >20000 >20000 >5000 >5000	0 0 0 2 204 699 0 815 <u>current</u> 2 <1 0 0.005 50 <u>current</u> 50 <u>current</u> 4 14175	3 <100 <116 6 1093 552 28 1216 bistory1 8 <1216 0 0.024 241 bistory1 ▲ 155684 ▲ 59120 ▲ 1000 141	2 0 0 3 1115 5 567 21 1559 history2 6 6 3 1 5 9 1 5 9 1 5 9 1 5 9 1 5 9 1 5 9 1 5 9 1 5 9 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 1 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 5 1 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 5 9 1 1 1 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >4µm Particles >21µm Particles >38µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	limit/base >50 >20 >0.2 >2000 >0.2 >2000 limit/base >20000 >5000 >640 >160 >40	0 0 0 2 204 699 0 815 current 2 <1 0 0.005 50 current 2 2 <1 0 1 0.005 50 2 14175 126 13	3 <100 <1003 552 28 1216 history1 8 <100 0.024 241 history1 ∧ 155684 ∧ 155684 ∧ 59120 ∧ 1000	2 0 0 <1 5 5 1115 567 21 1559 history2 6 <1 <1 0.006 61.7 history2 2 0.006 61.7 0.20795 ▲ 207795
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >50 >20 >0.2 >2000 >0.2 >2000 limit/base >20000 >5000 >640 >160 >40	0 0 0 2 204 699 0 815 <b>current</b> 2 <1 0 0.005 50 <b>current</b> 3 50 <b>current</b> 1 14175 126 13 1	3 <100 <1003 552 28 1216 bistory1 8 <1216 0 0.024 241 bistory1 ▲ 155684 ▲ 59120 ▲ 1000 141 3	2 0 0 3 1115 5 5 1115 5 6 21 1559 history2 6 3 3 4 3 4 3 2 1 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >4µm Particles >14µm Particles >38µm Particles >71µm Oil Cleanliness	ppm ppm ppm ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D7647 ASTM D7647	limit/base >50 >20 >0.2 >2000 2000 limit/base >20000 >5000 >5000 >640 >160 >40 >10 >10 >10 >21/19/16	0 0 0 2 204 699 0 815 <b>current</b> 2 <1 0 0.005 50 <b>current</b> 3 50 <b>current</b> 1 1 126 13 1 1 0 23/21/14	3 <100 <1093 552 28 1216 history1 8 <100 0.024 241 155684 ▲ 155684 ▲ 59120 ▲ 1000 141 3 0 24/23/17	2 0 0 3 3 5 1115 567 21 1559 history2 6 3 3 4 3 4 5 9 3 5 5 0 3 2 115 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >14µm Particles >38µm Particles >71µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm % ppm	ASTM D5185m ASTM D6304 ASTM D6304 ASTM D6304 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	limit/base >50 >20 >0.2 >2000 limit/base >20000 >5000 >5000 >640 >160 >40 >10	0 0 0 2 204 699 0 815 0 815 2 2 <1 0 0.005 50 0.005 50 0.005 50 0.005 50 0.005 10 11 0 126 13 11 0 0	3 <100 <11093 552 28 1216 history1 8 <100 0.024 241 0 0.024 241 155684 ▲ 155684 ▲ 59120 ▲ 1000 141 3 0	2 0 0 3 1115 5 5 1115 5 6 21 1559 history2 6 3 3 4 3 1559 6 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

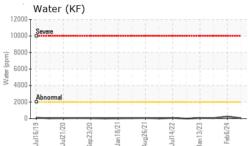
Sample Rating Trend

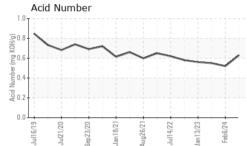
Submitted By: CHASE MCGEE

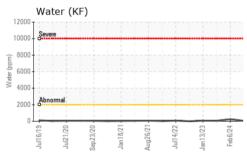


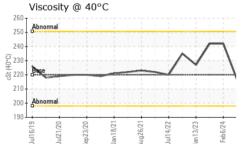
# **OIL ANALYSIS REPORT**





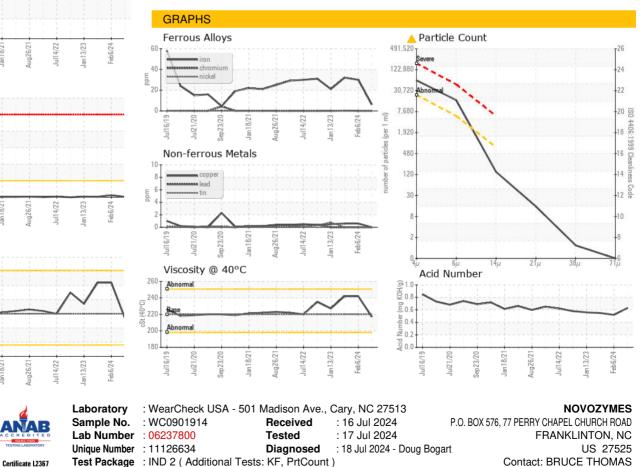


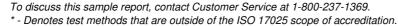




VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	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	220	217	242	242
SAMPLE IMAGES		method	limit/base	current	history1	history2
Color						

Bottom





brct@novozymes.com T: (919)494-3146 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: (919)494-3456

Report Id: NOVFRANC [WUSCAR] 06237800 (Generated: 07/18/2024 09:06:48) Rev: 1

Submitted By: CHASE MCGEE

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