

## **OIL ANALYSIS REPORT**

## Fwd Machinery Space [450143432] Transformer 8 MVA - Dielectric Fluid (S/N Sample Tag ET-81001A-S1) Component

**Transformer Oil** Fluid

MIDEL 7131 (2852 LTR)

### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. Wear

{not applicable}

### Contamination

The water content is negligible. There is no indication of any contamination in the transformer oil.

### Fluid Condition

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



Sample Rating Trend

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		PC	PC	PC				
Sample Date		Client Info		12 Nov 2023	25 Apr 2022	25 Nov 2021				
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				NORMAL	NORMAL	SEVERE				
WEAR METAL	S	method	limit/base	current	history1	history2				
PQ		ASTM D8184*	>65	0	0	0				
Iron	ppm	ASTM D5185(m)	>125	0						
Chromium	ppm	ASTM D5185(m)		0						
Nickel	ppm	ASTM D5185(m)		0						
Titanium	ppm	ASTM D5185(m)		0						
Silver	ppm	ASTM D5185(m)	>2	<1						
Aluminum	ppm	ASTM D5185(m)	>5	0						
Lead	ppm	ASTM D5185(m)	>30	<1						
Copper	ppm	ASTM D5185(m)	>10	<1						
Tin	ppm	ASTM D5185(m)	>2	0						
Antimony	ppm	ASTM D5185(m)		0						
Vanadium	ppm	ASTM D5185(m)		0						
Beryllium	ppm	ASTM D5185(m)		0						
Cadmium	ppm	ASTM D5185(m)		0						
ADDITIVES		method	limit/base	current	history1	history2				
Boron	ppm	ASTM D5185(m)		<1						
Barium	ppm	ASTM D5185(m)		<1						
Molybdenum	ppm	ASTM D5185(m)		0						
Manganese	ppm	ASTM D5185(m)		0						
Magnesium	ppm	ASTM D5185(m)		0						
Calcium	ppm	ASTM D5185(m)		0						
Phosphorus	ppm	ASTM D5185(m)		<1						
Zinc	ppm	ASTM D5185(m)		<1						
Sulfur	ppm	ASTM D5185(m)		4						
Lithium	ppm	ASTM D5185(m)		<1						
CONTAMINAN	TS	method	limit/base	current	history1	history2				
Silicon	ppm	ASTM D5185(m)	>25	<1						
Sodium	ppm	ASTM D5185(m)		<1						
Potassium	ppm	ASTM D5185(m)	>20	0						
Water	%	ASTM D6304*	>0.04	0.013	0.013	0.010				
ppm Water	ppm	ASTM D6304*	>400	135	0	105				
FLUID CLEANL	INESS	method	limit/base	current	history1	history2				
Particles >4µm		ASTM D7647	>5000	1229	2435	254				
Particles >6µm		ASTM D7647	>1300	343	372	60				
Particles >14µm		ASTM D7647	>160	27	25	5				
Particles >21µm		ASTM D7647	>40	8	9	1				
Particles >38µm		ASTM D7647	>10	0	1	0				
Particles >71µm		ASTM D7647	>3	0	0	0				
Oil Cleanliness 1:01:36) Rev: 1		ISO 4406 (c)	>19/17/14	<b>17/16/12</b> 18/16/12 15/13/10 Contact/Location: Josh Hynes - TERHAM						

Contact/Location: Josh Hynes - TERHAM



491,520 122.88

7,68

1,920

480 120

30

8

3.50 3.00 -(B/HOX -

Ē 2.00

Unupper (1.50 Virupper (1.50 Viruppe 0.50

0.00 Base

700

500 E 400

Mater ( 200 100 n - qa

6.5

3.5

3 34 32 (40°C) 30 cSt ( Base 28 Ab 26 A 24

cSt (100°C)

Severe 600

Abno 4 9

number of particles (per 1

# **OIL ANALYSIS REPORT**

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Particle Count	FLUID DEGRAD	DATION	method	limit/base	current	history1	history
10 10 Severe	Acid Number (AN)			0.03	0.62	0.63	0.56
0 0 4406:11999 Cleanlinness	VISUAL		method	limit/base	current	history1	history
	White Metal		Visual*	NONE	NONE	NONE	NONE
	Yellow Metal	scalar		NONE	NONE	NONE	NONE
8	Precipitate		Visual*	NONE	NONE	NONE	NONE
2	Silt Debris	scalar	Visual*	NONE	NONE	NONE	NONE
$0 \frac{1}{4\mu} 6\mu 14\mu 21\mu 38\mu 71\mu^{6}$	Sand/Dirt			NONE	NONE NONE	NONE	NONE
Acid Number	Appearance	scalar scalar	Visual*	NONE NORML	NORML	NORML	NORML
0 Severe	Odor	scalar		NORML	NORML	NORML	NORML
0 - 0	Emulsified Water	scalar	Visual*	>0.04	NEG		
Abnormal	Free Water	scalar		>0.04	NEG		
0							
	FLUID PROPE	RHES	method	limit/base		history1	history
Base	Specific Gravity		ASTM D4052(e)	0.970	0.971	0.971	0.974
Feb7/02 Jan8/09 Jan19/11 Jan19/11 Jan8/15 an12/15	Visc @ 40°C	cSt	ASTM D7279(m)		30.0	30.9	31.0
Feb7/03 Jan8/09 Jan19/11 Jan12/15 Jan12/15 Jan12/20 Nov12/23	Visc @ 100°C	cSt	ASTM D7279(m)	5.25	5.7	5.6	5.6
	Viscosity Index (VI)		ASTM D2270*	112	133	121	120
Water (KF)	Dielectric Breakdown	kV	ASTM D3612(e)*		49	44	32
0 - Severe	Interfacial Tension	mN/m	ASTM D971(e)*		26.09	25.67	<b>1</b> 8.13
0 - Abnomal	ASTM Color	scalar	ASTM D1500(e)		<0.5	<0.5	<0.5
	SAMPLE IMAG	ES	method	limit/base	current	history1	history
Feb1/02 Jan15/19 Apr3/20 Nov25/21 Apr3/223	Color						
Viscosity @ 100°C	Bottom				0		
6							
5- Base							
5 - Abnormal							
4							
Abnormal 10 10 10 10 10 10 10 10 10 10 10 10 10							
Feb <u>a</u> 02 Jan1/09 May14/10 Jan1/115 Jan1/115 Jan1/120 Jan1/20 Nov12/23							
Viscosity @ 40°C							
16							
Base							
Abnormal							
Abnormal							
Feb7/02 Jan8/09 Jan19/11 Jan8/18 Jan8/18 Nov25/21 Nov12/23							
	: WearCheck - C8-11	75 Applel	by Line, Burl	lington, ON	L7L 5H9	Suncor - Terra	Nova Proje

Suncor - Terra Nova Projects urlington, ON L/L 5HS CALA Sample No. : PC : 27 Nov 2023 Scotia Centre, 235 Water Strret Received Lab Number : 02599009 Diagnosed : 07 Dec 2023 St. John`s, NL ISO 17025:2017 Accredited Laboratory Unique Number : 5684089 Diagnostician : Bill Quesnel CA A1C 1B6 Test Package : TRF 1 (Additional Tests: ICP, KV100, KV40, PQ, PrtCount, Spat, VI) Contact: Josh Hynes To discuss this sample report, contact Customer Service at 1-800-268-2131. joshynes@suncor.com T: (709)778-3575 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. F: (709)724-2835

Contact/Location: Josh Hynes - TERHAM

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