

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	17/16/12 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	1 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

NORML