



TRAAP

Texas Refinery Advanced Analysis Program

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
MARGARET ANN (S/N 37224460)

Component
Starboard Diesel Engine

Fluid
AMERICAN LUBRICANTS MOLY SELECT 15W40 (--- QTS)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		TR06049142	TR05721528	TR03484882
Sample Date		Client Info		18 Dec 2023	14 Dec 2022	10 Apr 2014
Machine Age	hrs	Client Info		36708	0	0
Oil Age	hrs	Client Info		680	1229	0
Filter Age	hrs	Client Info		321	500	0
Oil Changed		Client Info		Not Changd	Not Changd	N/A
Filter Changed		Client Info		Changed	Changed	N/A
Sample Status				ABNORMAL	NORMAL	MARGINAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>90	15	71	20
Chromium	ppm	ASTM D5185m	>20	1	2	2
Nickel	ppm	ASTM D5185m	>2	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	11	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	2
Lead	ppm	ASTM D5185m	>40	0	23	▲ 44
Copper	ppm	ASTM D5185m	>330	0	16	4
Tin	ppm	ASTM D5185m	>15	0	4	0
Vanadium	ppm	ASTM D5185m		0	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

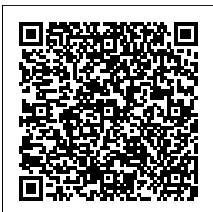
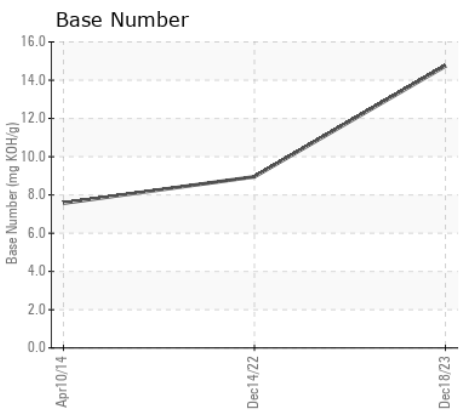
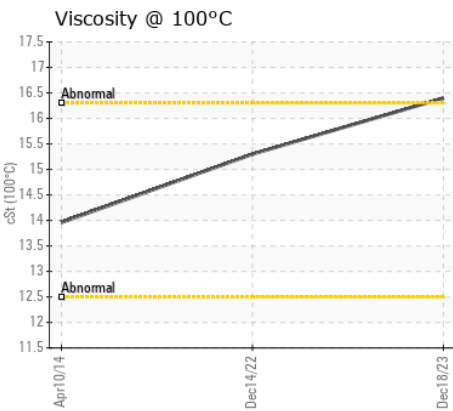
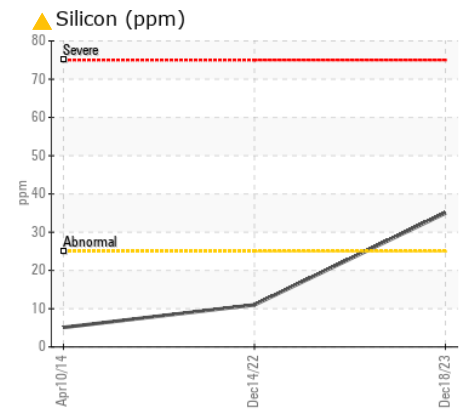
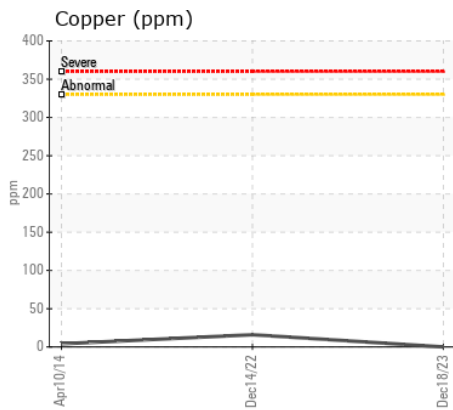
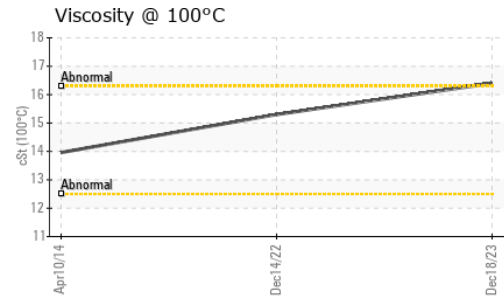
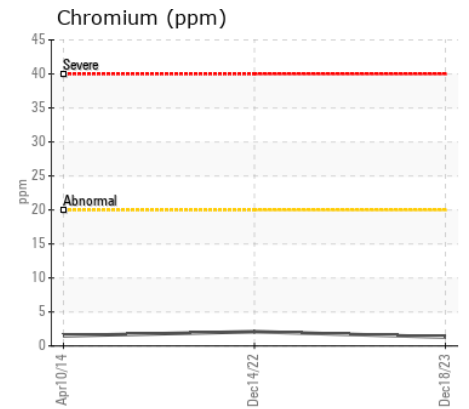
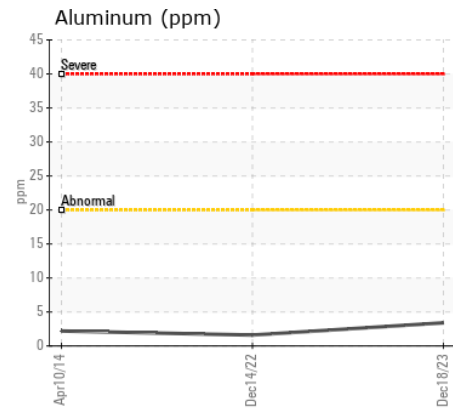
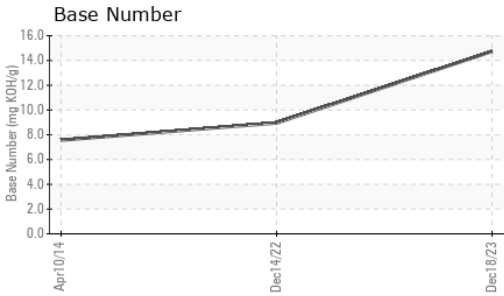
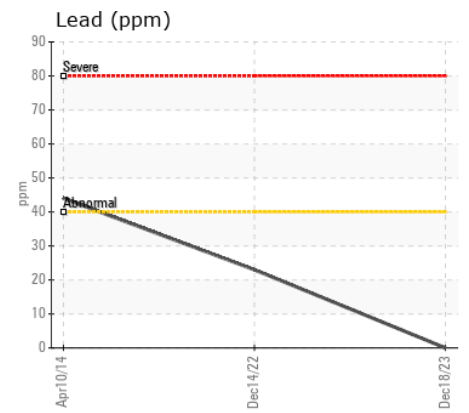
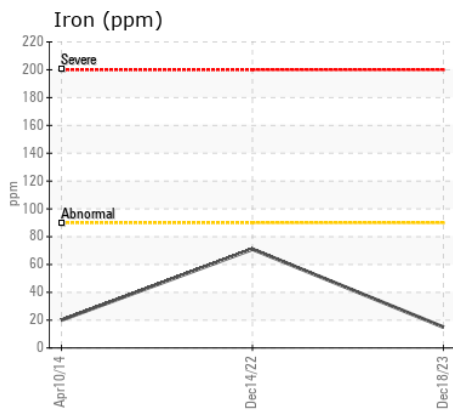
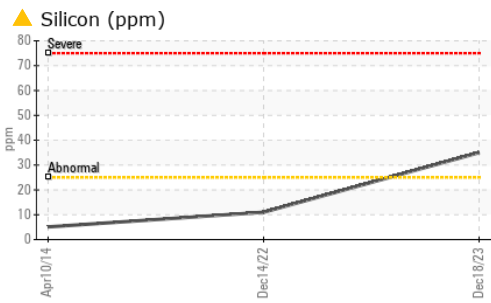
Elemental level of silicon (Si) above normal.

Silicon	ppm	ASTM D5185m	>25	▲ 35	11	5
Potassium	ppm	ASTM D5185m	>20	0	0	3
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>6	0.2	0.6	0
Nitration	Abs/cm	*ASTM D7624	>20	8.7	14.7	8.
Sulfation	Abs/.1mm	*ASTM D7415	>30	18.7	28.0	18.
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

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		0	7	4
Boron	ppm	ASTM D5185m		0	22	1
Barium	ppm	ASTM D5185m		7	0	0
Molybdenum	ppm	ASTM D5185m		936	352	151
Manganese	ppm	ASTM D5185m		0	1	<1
Magnesium	ppm	ASTM D5185m		90	639	781
Calcium	ppm	ASTM D5185m		4078	2692	1554
Phosphorus	ppm	ASTM D5185m		1038	1066	1058
Zinc	ppm	ASTM D5185m		1100	1255	1343
Sulfur	ppm	ASTM D5185m		6837	5121	3352
Oxidation	Abs/.1mm	*ASTM D7414	>25	11.4	24.9	14.
Base Number (BN)	mg KOH/g	ASTM D2896		14.74	8.95	7.57
Visc @ 100°C	cSt	ASTM D445		16.4	15.3	13.96



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : TR06049142 **Received** : 02 Jan 2024
Lab Number : 06049142 **Diagnosed** : 06 Jan 2024
Unique Number : 10809750 **Diagnostician** : Don Baldrige
Test Package : MOB 2

SHAWNEETOWN HARBOR SERVICES
 256 N LINCOLN BLVD EAST
 SHAWNEETOWN, IL
 US 62984
 Contact: SHARON HEERNE

To discuss this sample report, contact Customer Service at 1-800-827-0711.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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