



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	ATTENTION
FLUID CONDITION	NORMAL

Area
SAP-1953348 - HOLLY FRONTIER TULSA OK [2010594558]

Machine Id
KAESER 1306 - HOLLY FRONTIER TULSA OK

Component
Screw Compressor

Fluid
KAESER SIGMA (OEM) S-460 (30 GAL)

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		APC06211624	APC06054946	APC05862405
Sample Date		Client Info		12 Jun 2024	01 Sep 2023	25 May 2023
Machine Age	hrs	Client Info		21407	24674	19901
Oil Age	hrs	Client Info		2367	11976	2203
Filter Age	hrs	Client Info		2367	2435	2203
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ATTENTION	NORMAL	NORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>60	<1	<1	0
Chromium	ppm	ASTM D5185m	>4	<1	<1	0
Nickel	ppm	ASTM D5185m	>3	<1	<1	0
Titanium	ppm	ASTM D5185m	>3	<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>5	2	2	0
Lead	ppm	ASTM D5185m	>10	<1	<1	0
Copper	ppm	ASTM D5185m	>30	5	9	4
Tin	ppm	ASTM D5185m	>15	<1	2	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

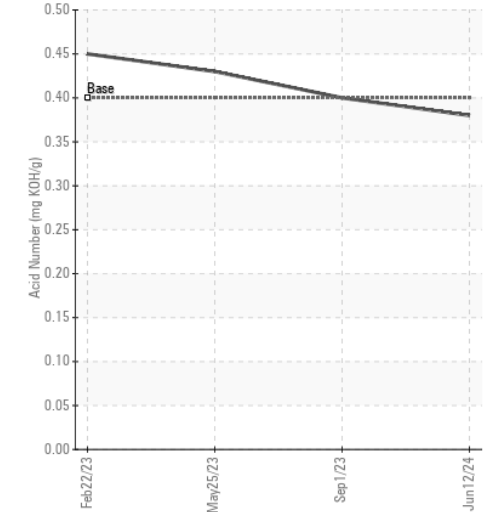
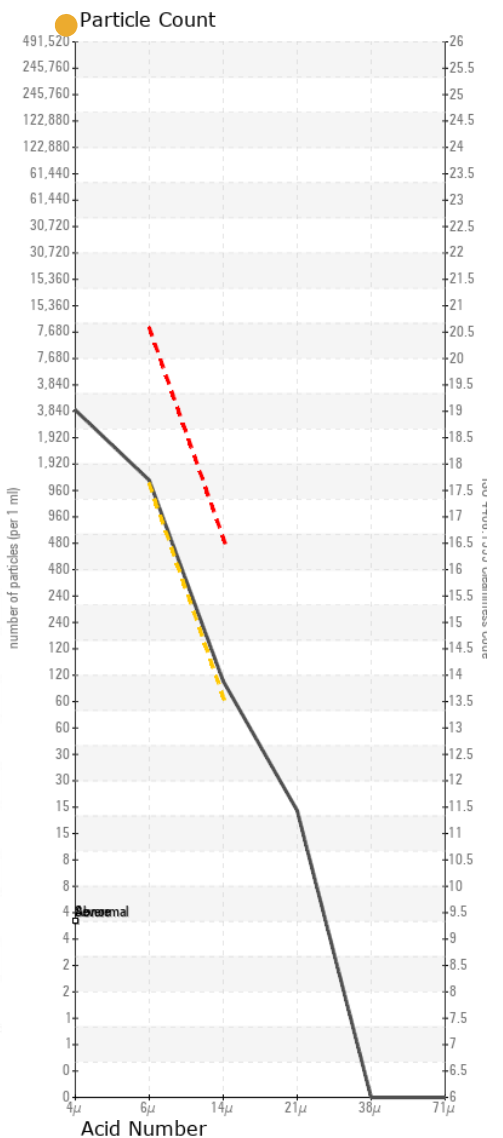
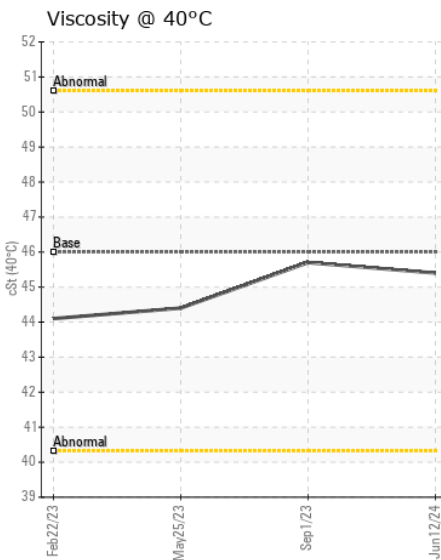
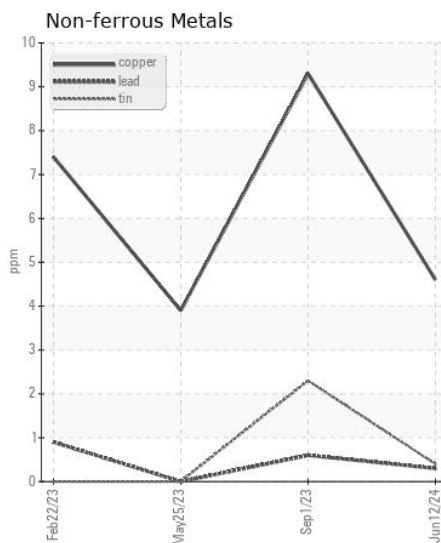
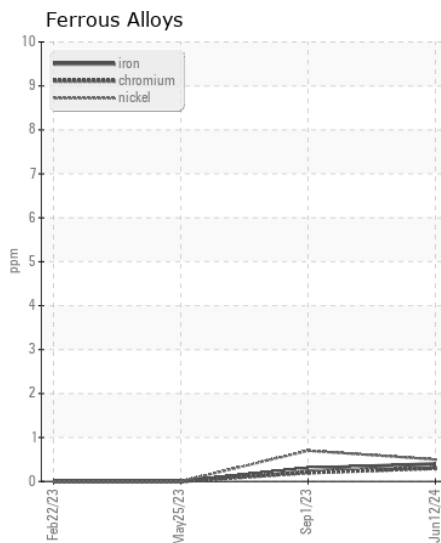
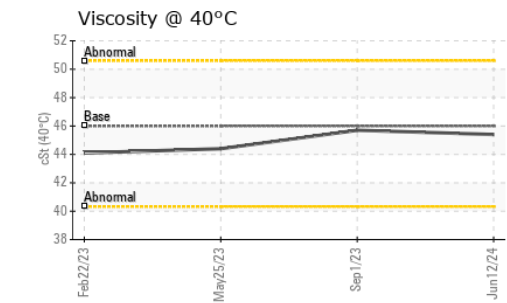
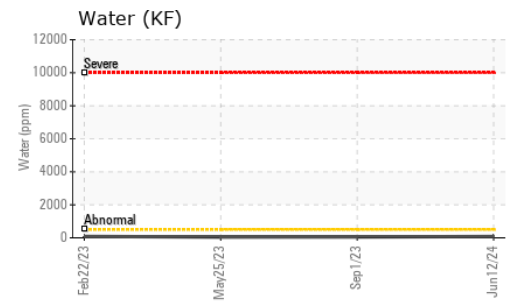
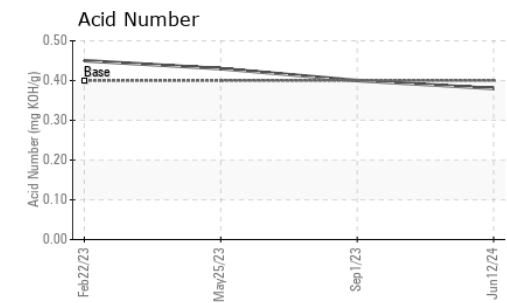
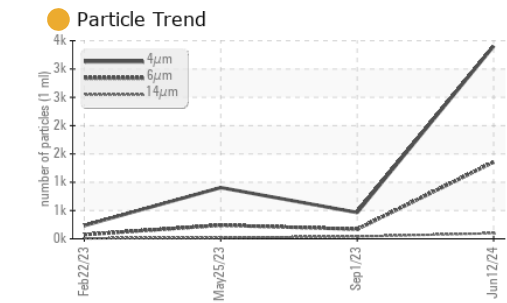
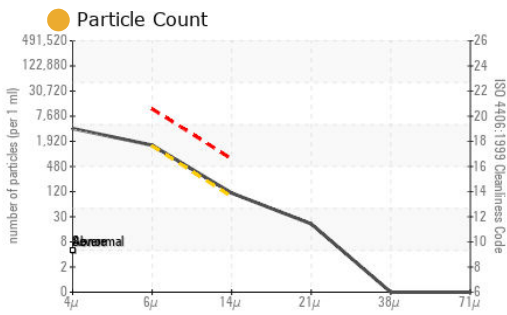
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

Silicon	ppm	ASTM D5185m	>50	<1	<1	0
Potassium	ppm	ASTM D5185m	>20	<1	<1	<1
Water	%	ASTM D6304	>0.05	0.008	0.005	0.004
ppm Water	ppm	ASTM D6304	>500	81	51	44.1
Particles >4µm		ASTM D7647		3404	464	905
Particles >6µm		ASTM D7647	>1300	1357	170	240
Particles >14µm		ASTM D7647	>80	98	40	21
Particles >21µm		ASTM D7647	>20	18	15	5
Particles >38µm		ASTM D7647	>4	0	0	0
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	~-/17/13	19/18/14	16/15/12	17/15/12
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	LIGHT
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	>0.05	NEG	NEG	NEG

FLUID CONDITION

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

Sodium	ppm	ASTM D5185m		0	0	1
Boron	ppm	ASTM D5185m		0	0	0
Barium	ppm	ASTM D5185m	90	0	0	5
Molybdenum	ppm	ASTM D5185m		2	<1	0
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	90	0	0	0
Calcium	ppm	ASTM D5185m	2	0	0	0
Phosphorus	ppm	ASTM D5185m		11	22	2
Zinc	ppm	ASTM D5185m		6	0	0
Sulfur	ppm	ASTM D5185m		17354	17167	20332
Acid Number (AN)	mg KOH/g	ASTM D8045	0.4	0.38	0.40	0.43
Visc @ 40°C	cSt	ASTM D445	46	45.4	45.7	44.4



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : APC06211624 **Received** : 17 Jun 2024
Lab Number : 06211624 **Tested** : 18 Jun 2024
Unique Number : 11084488 **Diagnosed** : 18 Jun 2024 - Angela Borella
Test Package : IND 2 (Additional Tests: KF, PrtCount)

AIR PRODUCTS AND CHEMICALS INC - ALLENTOWN
 7201 HAMILTON BLVD
 ALLENTOWN, PA
 US 18195

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - 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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