

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend





**Compressor** Fluid

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

#### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

# Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

## Fluid Condition

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

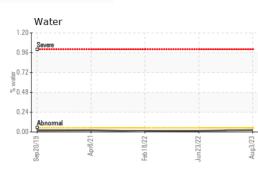
Oil AgeNOil ChangedhOil ChangedSample StatusIronpChromiumpNickelpTitaniumpSilverpAluminumpLeadpCopperpTinpAntimonypVanadiumpBoronpBariumpMagnesiumpCalciumpZincpSulfurpSodiumpSodiumpYatery	ATION hrs hrs ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	methodClient InfoClient InfoClient InfoClient InfoClient InfoClient InfoASTM D5185mASTM D5185m	>3 >3 >2 >10 >10 >50 >10	Current KCPA005675 03 Aug 2023 24006 0 N/A NORMAL 0 Current 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	history1         KCP49527         23 Jun 2022         19516         3069         N/A         ABNORMAL         history1         1         0         0         0         0         0         7         0         7         0            0	history2         KCP38293         18 Feb 2022         17183         0         Changed         ABNORMAL         history2         <1         0         <1         0         <1         0         <1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0
Sample DateIMachine AgehOil AgehOil Changedsample StatusSample StatusIWEAR METALSPIronpNickelpTitaniumpSilverpAluminumpLeadpCopperpTinpAntimonypCadmiumpBoronpBariumpMagnesiumpCalciumpSulfurpSulfurpSulfurpPhosphoruspSulfurpSodiumpYatery	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Client Info ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	03 Aug 2023 24006 0 N/A NORMAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	23 Jun 2022 19516 3069 N/A ABNORMAL 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18 Feb 2022 17183 0 Changed ABNORMAL
Machine AgehOil AgehOil ChangedsSample StatusmWEAR METALSpIronpChromiumpChromiumpSilverpAluminumpLeadpCopperpTinpAntimonypVanadiumpBoronpBariumpMagnesiumpCalciumpSulfurpSulfurpSulfurpSulfurpSodiumpSodiumpSodiumpYatery	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	24006 0 N/A NORMAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	19516 3069 N/A ABNORMAL 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17183 0 Changed ABNORMAL <1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Oil AgehOil ChangedSample StatusWEAR METALSIronpChromiumpChromiumpSilverpAluminumpLeadpCopperpTinpAntimonypCadmiumpBoronpBariumpManganesepMagnesiumpCalciumpSulfurpSulfurpSodiumpSodiumpVatery	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	0 N/A NORMAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3069 N/A ABNORMAL 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 Changed ABNORMAL 10000000000000000000000000000000000
Oil Changed         Sample Status         WEAR METALS         Iron       p         Chromium       p         Nickel       p         Titanium       p         Silver       p         Aluminum       p         Lead       p         Copper       p         Tin       p         Antimony       p         Vanadium       p         Cadmium       p         Boron       p         Barium       p         Molybdenum       p         Magnesium       p         Calcium       p         Zinc       p         Sulfur       p         Sulfur       p         Sodium       p         Votassium       p         Motassium       p	ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info method ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	N/A NORMAL Current 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	N/A ABNORMAL 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Changed ABNORMAL <1
Sample Status WEAR METALS Iron p Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Calcium p Silfur p Sulfur p Sulfur p Sodium p Vater v	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	NORMAL current 0 0 0 0 0 0 0 0 0 5 0 0 	ABNORMAL history1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	ABNORMAL history2 <1 0 0 0 0 0 0 0 0 22 0 0 0 0 0 0 0 0
WEAR METALS         Iron       p         Chromium       p         Nickel       p         Titanium       p         Silver       p         Aluminum       p         Lead       p         Copper       p         Tin       p         Antimony       p         Cadmium       p         Cadmium       p         Boron       p         Barium       p         Malganese       p         Magnesium       p         Calcium       p         Zinc       p         Sulfur       p         Sulfur       p         Sodium       p         Yotassium       p         Water       %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	Current 0 0 0 0 0 0 0 0 5 0 0 	history1           1           0           0           0           0           0           0           7           0	history2 <1 0 0 0 0 0 0 0 0 22 0 0 0 0
Iron p Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p Cadmium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p Sulfur p CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	>50 >10 >3 >2 >10 >10 >50 >10	0 0 0 0 0 0 0 5 0 	1 0 0 0 <1 0 7 0 	<1 0 0 0 0 0 0 0 22 0 0 0
Chromium p Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p Sulfur p Vater %	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 ASTM D5185m ASTM D5185m	>10 >3 >3 >2 >10 >10 >50 >10	0 0 0 0 0 0 5 0 	0 0 0 <1 0 7 0 	0 0 0 0 0 0 22 0 0
Nickel p Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p 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 ASTM D5185m	>3 >3 >2 >10 >10 >50 >10	0 0 0 0 0 5 0 	0 0 0 <1 0 7 0	0 0 0 0 0 22 0 0
Titanium p Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Molybdenum p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Water %	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	>3 >2 >10 >10 >50 >10	0 0 0 0 5 0 	0 0 <1 0 7 0	0 0 0 0 22 0 0
Silver p Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Magaesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Water %	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >10 >10 >50 >10	0 0 0 5 0 	0 <1 0 7 0	0 0 0 22 0 0
Aluminum p Lead p Copper p Tin p Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Water %	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>10 >10 >50 >10	0 0 5 0 	<1 0 7 0 	0 0 22 0 0
Lead p Copper p Tin p Antimony p Vanadium p Cadmium p Cadmium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Calcium p Sulfur p CONTAMINANTS Silicon p Sodium p Water %	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>10 >50 >10	0 5 0 	0 7 0	0 22 0 0
Copper p Tin p Antimony p Vanadium p Cadmium p Cadmium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Calcium p Contaminant p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>50 >10	5 0 	7 0 	22 0 0
Tin p Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>10	0	0	0 0
Antimony p Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m				0
Vanadium p Cadmium p ADDITIVES Boron p Barium p Molybdenum p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m ASTM D5185m				
Cadmium p ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %		ASTM D5185m		<1	0	
ADDITIVES Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Calcium p Calcium p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm					0
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %		method		0	0	0
Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %				current	history1	history2
Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m		0	0	<1
Manganese     p       Magnesium     p       Calcium     p       Phosphorus     p       Zinc     p       Sulfur     p       CONTAMINANTS       Silicon     p       Sodium     p       Potassium     p       Water     %	ppm	ASTM D5185m	90	0	31	0
Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Mater %	ppm	ASTM D5185m		0	0	0
Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m		0	0	0
Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m	90	44	41	4
Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m	2	<1	<1	0
Zinc p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m		1	3	0
Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m		8	13	7
Silicon p Sodium p Potassium p Water %	ppm	ASTM D5185m		19885	18534	15639
Sodium p Potassium p Water %		method	limit/base	current	history1	history2
Potassium p Water %	ppm	ASTM D5185m	>25	<1	<1	<1
Water %	ppm	ASTM D5185m		9	15	2
Water %	ppm	ASTM D5185m	>20	2	<1	1
oom Water n	%	ASTM D6304	>0.05	0.023	0.014	0.009
phil water p	ppm	ASTM D6304	>500	234.0	144.0	91.8
FLUID CLEANLINES	SS	method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647		2072		
Particles >6µm		ASTM D7647	>1300	317		
Particles >14µm		ASTM D7647	>80	13		
Particles >21µm		ASTM D7647	>20	4		
Particles >38µm		ASTM D7647	>4	0		
Particles >71µm		ASTM D7647	>3	0		
Oil Cleanliness		ISO 4406 (c)	>/17/13	18/15/11		
FLUID DEGRADATI		100 4400 (0)		current	history1	history2
Acid Number (AN) m		method			0.36	0.437

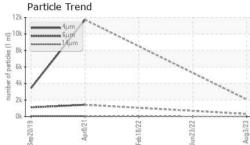
Report Id: UPSPHI [WUSCAR] 05927855 (Generated: 08/18/2023 18:03:28) Rev: 1

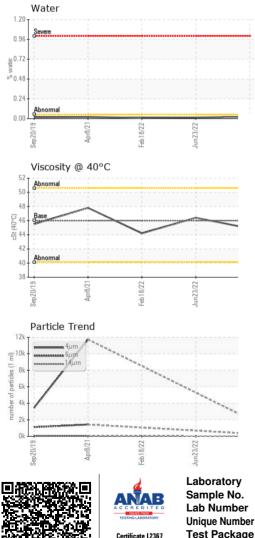
Contact/Location: C BARKLEY - UPSPHI



# **OIL ANALYSIS REPORT**

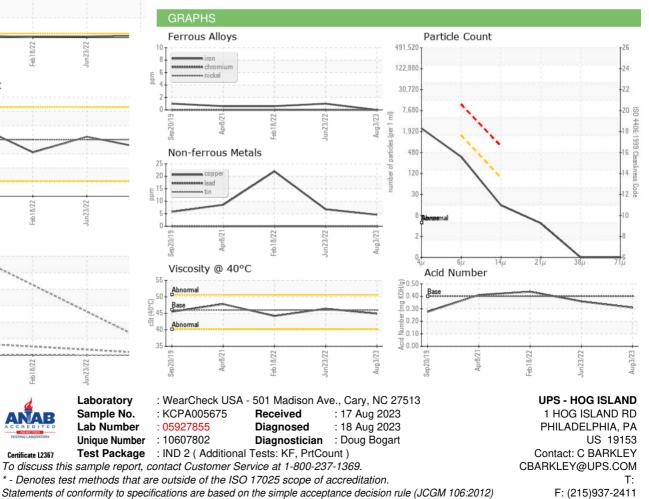






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	🔺 MODER	🔺 MODER
Sand/Dirt	scalar	*Visual	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
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46	44.9	46.4	44.2
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
Color						

Bottom



Contact/Location: C BARKLEY - UPSPHI