

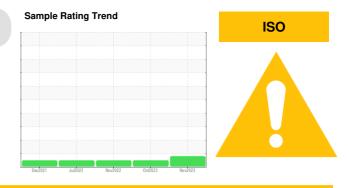
PROBLEM SUMMARY

Vessel

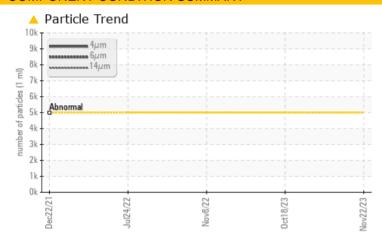
KAT 09 (High Pressure Deck & Factory Hyd.)

Hydraulic System

SHELL TELLUS T46 (2500 LTR)



COMPONENT CONDITION SUMMARY



RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status			ATTENTION	NORMAL	NORMAL			
Particles >4µm	ASTM D7647	>5000	9506					
Oil Cleanliness	ISO 4406 (c)	>19/17/14	20/16/10					

Customer Id: KATSHESH Sample No.: PC0080317 Lab Number: 02601825 Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data: Wes Davis +1 905-569-8600 x223 wesd@wearcheck.ca

To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 gloria.gonzalez@wearcheck.com

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Change Filter			?	We recommend you service the filters on this component.

HISTORICAL DIAGNOSIS

18 Oct 2023 Diag: Kevin Marson

NORMAL



Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MOB 2 test kits, this testkit includes Particle Count to determine the ISO cleanliness of the fluid.All component wear rates are normal. There is no indication of any contamination in the component(unconfirmed). The condition of the oil is acceptable for the time in service.



08 Nov 2022 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MOB 2 test kits, this testkit includes Particle Count to determine the ISO cleanliness of the fluid.All component wear rates are normal. There is no indication of any contamination in the component(unconfirmed). The condition of the oil is acceptable for the time in service.

24 Jul 2022 Diag: Wes Davis

NORMAL



Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MOB 2 test kits, this testkit includes Particle Count to determine the ISO cleanliness of the fluid.All component wear rates are normal. There is no indication of any contamination in the component(unconfirmed). The condition of the oil is acceptable for the time in service.





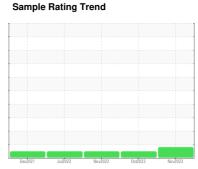
OIL ANALYSIS REPORT

Vessel

KAT 09 (High Pressure Deck & Factory Hyd.)

Hydraulic System

SHELL TELLUS T46 (2500 LTR)





DIAGNOSIS

Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

All component wear rates are normal.

Contamination

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

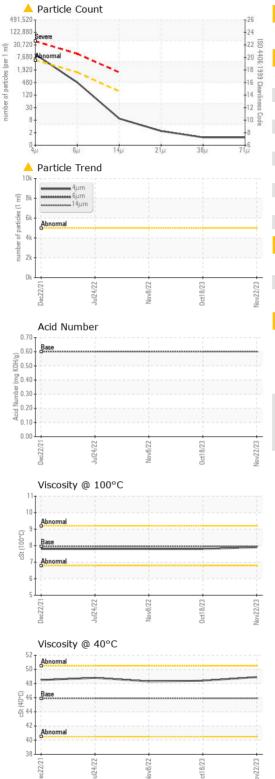
Fluid Condition

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

		Dec2021	Jul2022	Nov2022 Oct2023	Nov2023	
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PC0080317	PC0018589	PC0031764
Sample Date		Client Info		22 Nov 2023	18 Oct 2023	08 Nov 2022
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				ATTENTION	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Water		WC Method	>0.05	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	7	6	6
Chromium	ppm	ASTM D5185(m)	>10	0	0	0
Nickel	ppm	ASTM D5185(m)	>10	<1	0	<1
Titanium	ppm	ASTM D5185(m)		0	0	0
Silver	ppm	ASTM D5185(m)		<1	<1	0
Aluminum	ppm	ASTM D5185(m)	>10	<1	0	0
Lead	ppm	ASTM D5185(m)	>20	<1	<1	<1
Copper	ppm	ASTM D5185(m)	>20	6	6	6
Tin	ppm	ASTM D5185(m)	>10	0	0	0
Antimony	ppm	ASTM D5185(m)		0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
Beryllium	ppm	ASTM D5185(m)		0	0	0
Cadmium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185(m)	limit/base 0	current 2	history1 2	history2 2
	ppm		0			
Boron		ASTM D5185(m)	0	2	2	2
Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	0	2 <1	2 <1	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	2 <1 1	2 <1 1	2 0 1
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	2 <1 1	2 <1 1 0	2 0 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	2 <1 1 0 23	2 <1 1 0 23	2 0 1 0 22
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48	2 <1 1 0 23 101	2 <1 1 0 23 105 263 275	2 0 1 0 22 106 305 273
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337	2 <1 1 0 23 101 269	2 <1 1 0 23 105 263	2 0 1 0 22 106 305
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426	2 <1 1 0 23 101 269 287	2 <1 1 0 23 105 263 275	2 0 1 0 22 106 305 273
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426	2 <1 1 1 0 23 101 269 287 1613	2 <1 1 0 23 105 263 275 1590	2 0 1 0 22 106 305 273 1705
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 0 23 101 269 287 1613 <1	2 <1 1 0 23 105 263 275 1590 <1	2 0 1 0 22 106 305 273 1705
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 1 0 23 101 269 287 1613 <1 current	2 <1 1 1 0 23 105 263 275 1590 <1 history1	2 0 1 0 22 106 305 273 1705 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) method ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 1 0 23 101 269 287 1613 <1 current 1	2 <1 1 1 0 23 105 263 275 1590 <1 history1 <1	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 >20	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current \$\times 0.000 000 000 000 000 000 000 000 000	2 <1 1 0 23 105 263 275 1590 <1 history1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current \$\times 9506 429 \$\)	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm	ppm	ASTM D5185(m) ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160 >40 >10	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337	2 <1 1 0 23 101 269	2 <1 1 0 23 105 263 275	2 0 1 0 22 106 305 273
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 0 23 101 269 287 1613 <1	2 <1 1 0 23 105 263 275 1590 <1	2 0 1 0 22 106 305 273 1705
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 1 0 23 101 269 287 1613 <1 current	2 <1 1 1 0 23 105 263 275 1590 <1 history1	2 0 1 0 22 106 305 273 1705 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) method ASTM D5185(m)	0 0 0 0 48 337 426 2280	2 <1 1 1 0 23 101 269 287 1613 <1 current 1	2 <1 1 1 0 23 105 263 275 1590 <1 history1 <1	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium	ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20	2 0 1 0 22 106 305 273 1705 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI	ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 >20	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm	ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current \$\times 0.000 000 000 000 000 000 000 000 000	2 <1 1 0 23 105 263 275 1590 <1 history1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >6µm	ppm	ASTM D5185(m) MASTM D5185(m) ASTM D5185(m)	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current \$\times 9506 429 \$\)	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm	ppm	ASTM D5185(m) ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160 >40	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm Particles >38µm	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160 >40 >10	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINAN Silicon Sodium Potassium FLUID CLEANI Particles >4µm Particles >14µm Particles >21µm Particles >38µm	ppm	ASTM D5185(m) METHOD ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 0 48 337 426 2280 limit/base >15 >20 limit/base >5000 >1300 >160 >40 >10	2 <1 1 1 0 23 101 269 287 1613 <1 current 1 19 <1 current	2 <1 1 0 23 105 263 275 1590 <1 history1 <1 20 1 history1	2 0 1 0 22 106 305 273 1705 <1 history2 1 23 1 history2



OIL ANALYSIS REPORT



FLUID DEGRAD	NOITAC	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D974*	.6	0.30		
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	VLITE	NONE
Debris	scalar	Visual*	NONE	NONE	NONE	VLITE
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 PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	45.9	48.9	48.4	48.3
Visc @ 100°C	cSt	ASTM D7279(m)	7.95	7.9	7.8	7.8
Viscosity Index (VI)	Scale	ASTM D2270(III)	145	130	129	129
SAMPLE IMAG	ES	method	limit/base	current	history1	history2
Color						
Bottom						



CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number

: PC0080317 : 02601825

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Ocean Choice International - Katsheshuk II

Received Diagnosed : 5694910 Diagnostician : Wes Davis

: 08 Dec 2023 : 09 Dec 2023

1315 Topsail Rd, P.O. Box 8190 St. John's, NL

CA A1B 3N4 Contact: Chief Engineer

Test Package : IND 2 (Additional Tests: KV100, VI) To discuss this sample report, contact Customer Service at 1-800-268-2131.

katengine@oceanchoice.com T:

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: