

Machine Id **AFT SERVO** Component **Hydraulic System** Fluid **CASTROL HYSPIN AWS HYDRAULIC 15 (--- GAL)**

RECOMMENDATION

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please submit a sample of the new (unused) oil to establish a baseline. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 2 test kits, this testkit includes Particle Count to determine the ISO cleanliness of the fluid. this testkit includes AN to determine the suitability of the oil for continued use.

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WEAR

All component wear rates are normal.

CONTAMINATION

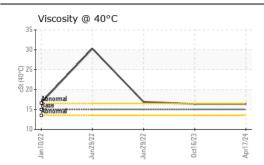
There is no indication of any contamination in the component(unconfirmed).

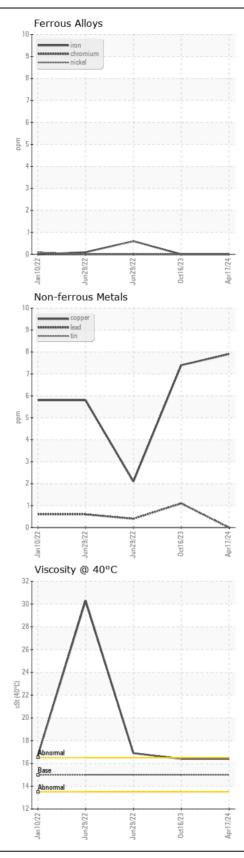
FLUID CONDITION

The condition of the oil is acceptable for the time in service (unconfirmed).

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0872094	WC0773489	WC0713739
Sample Date		Client Info		17 Apr 2024	16 Oct 2023	29 Jun 2022
Machine Age	hrs	Client Info		5864	5528	4800
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Not Changd	N/A	N/A
Filter Changed		Client Info		Not Changd	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
			. 20	0	0	.1
-				-		<1 0
						0
		()	>10	-		0
		. /				0
			<u>\10</u>	-		0
		1 1				<1
				-		6
				-		0
			210	-		0
		1 1	NONE			NONE
			-	-		NONE
Silicon	ppm	ASTM D5185(m)	>20	0	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	0	0	<1
Water		WC Method	>0.1	NEG	NEG	NEG
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
	scalar					NORML
Emulsified Water	scalar	Visual*	>0.1	NEG	NEG	NEG
Sodium	ppm	ASTM D5185(m)		<1	<1	<1
Boron	ppm	ASTM D5185(m)		0	<1	0
Barium	ppm	ASTM D5185(m)		0	<1	0
Molybdenum	ppm	ASTM D5185(m)		0	0	0
Manganese	ppm	ASTM D5185(m)		0	0	0
Magnesium	ppm	ASTM D5185(m)		<1	<1	<1
Calcium	ppm	ASTM D5185(m)		48	48	50
Phosphorus	ppm	ASTM D5185(m)		369	377	377
Zinc	ppm	ASTM D5185(m)		468	468	472
Sulfur	ppm	ASTM D5185(m)		1468	1498	1679
	Sample Number Sample Date Aachine Age Oil Age Filter Age Oil Changed Filter Changed Sample Status Iron Chromium Chromium Chromium Chromium Chromium Chromium Chromium Chromium Chromium Silver Copper	Sample NumberISample DateMachine AgehrsOil AgehrsFilter AgehrsOil ChangedIFilter ChangedJSample StatusppmChromiumppmNickelppmSilverppmLeadppmCopperppmVanadiumppmVanadiumppmSiliconppmVatassiumscalarSiliconppmSiliconppmSiliconppmSiliconscalarSultscalarSodiumscalarSand/DirtscalarSand/DirtscalarSand/DirtscalarSodiumppmBariumppmManganeseppmMagnesiumppmCalciumppmMagnesiumppmMagnesiumppm	Sample NumberIclient InfoSample DateClient InfoMachine AgehrsClient InfoOil AgehrsClient InfoFilter AgehrsClient InfoOil ChangedClient InfoFilter ChangedIclient InfoSample StatusClient InfoIronppmASTM D5185(m)ChromiumppmASTM D5185(m)NickelppmASTM D5185(m)SilverppmASTM D5185(m)AluminumppmASTM D5185(m)LeadppmASTM D5185(m)CopperppmASTM D5185(m)VanadiumppmASTM D5185(m)VanadiumppmASTM D5185(m)VanadiumppmASTM D5185(m)VanadiumppmASTM D5185(m)VanadiumppmASTM D5185(m)VaterypmASTM D5185(m)PotassiumppmASTM D5185(m)PotassiumppmASTM D5185(m)Sand/DirtscalarVisual*Sand/DirtscalarVisual*SodiumppmASTM D5185(m)BoronppmASTM D5185(m)BariumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)MagnesiumppmASTM D5185(m)<	Sample NumberClient InfoSample DateClient InfoMachine AgehrsClient InfoOil AgehrsClient InfoFilter AgehrsClient InfoFilter AgehrsClient InfoFilter ChangedClient InfoSample StatusClient InfoIronppmASTM D5185(m)NickelppmASTM D5185(m)NickelppmASTM D5185(m)SilverppmASTM D5185(m)AuminumppmASTM D5185(m)LeadppmASTM D5185(m)CopperppmASTM D5185(m)Yellow MetalscalarVisual*Nonkeyellow MetalscalarSiliconppmASTM D5185(m)SiliconppmASTM D5185(m)Yellow MetalscalarVisual*SiliconppmASTM D5185(m)SiliconppmASTM D5185(m)SiliconppmASTM D5185(m)SodiumppmASTM D5185(m)SolitscalarVisual*NONEscalarVisual*NONEscalarVisual*NONEscalarVisual*AppearancescalarVisual*AppearancescalarVisual*MolybdenumppmASTM D5185(m)BoronppmASTM D5185(m)ManganeseppmASTM D5185(m)pintManganeseppmASTM D5185(m)pintManganeseppmA	Sample NumberIClient InfoIClient InfoIClient InfoIT Apr 2024Machine AgehrsClient Info5864Oil AgehrsClient Info0Filter AgehrsClient Info0Oil ChangedIClient InfoNot ChangdFilter AgeInsClient InfoNot ChangdFilter AgeClient InfoNot ChangdFilter ChangedIClient InfoNot ChangdSample StatusClient InfoNot ChangdIronppmASTM D5185(m)>200NickelppmASTM D5185(m)>100NickelppmASTM D5185(m)>100SilverppmASTM D5185(m)>100QuantinumppmASTM D5185(m)>100LeadppmASTM D5185(m)>100QuandiumppmASTM D5185(m)>100VanadiumppmASTM D5185(m)>100Visual*NONENONEYellow MetalscalarVisual*NONESiliconppmASTM D5185(m)>2000Vatarvisual*NONENONESand/DirtscalarVisual*NONEAppearancescalarVisual*NOREAppearancescalarVisual*NORESodiumppmASTM D5185(m)>0.1NOREBoronppmASTM D5185(m)scalarNORESodiumppmASTM D5185(m)scal0SodiumppmASTM D5185(m)	Sample NumberICIIENT InfoICIIENT InfoWC0872094WC0773499Sample DateCilent Info17 Apr 202416 Oct 2023Machine AgehrsClient InfoS8645528Oil AgehrsClient InfoI00Filter AgehrsClient InfoINot ChangedN/AFilter AgeIraClient InfoINot ChangedN/AFilter ChangedIroClient InfoNot ChangedN/ASample StatusClient InfoNot ChangedN/ASample StatusSTM D5185(m)>20000NickelppmASTM D5185(m)>1000NickelppmASTM D5185(m)>1000SilverppmASTM D5185(m)>1001CopperppmASTM D5185(m)>1000VanadiumppmASTM D5185(m)>1000VanadiumppmASTM D5185(m)>1000VanadiumppmASTM D5185(m)>1000VanadiumppmASTM D5185(m)>1000VanadiumppmASTM D5185(m)>2000VanadiumppmASTM D5185(m)>2000VanadiumppmASTM D5185(m)>2000VanadiumppmASTM D5185(m)>2000VanadiumppmASTM D5185(m)>2000Va

Contact/Location: Horizon Arctic Chief Engineer - HORIZONARC





Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Horizon Maritime Services Ltd. - Horizon Arctic CALA Sample No. : WC0872094 Received : 23 Apr 2024 87 WATER STREET,, 2ND FLOOR Lab Number : 02630936 Tested ST.JOHNS, NL : 23 Apr 2024 ISO 17025:2017 Accredited Laboratory Unique Number : 5772089 Diagnosed : 23 Apr 2024 - Kevin Marson CA A1C 1A5 Test Package : MAR 1 Contact: Horizon Arctic Chief Engineer To discuss this sample report, contact Customer Service at 1-800-268-2131. chiefeng.arctic@horizonvessel.com T: (709)702-4447 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: