

OIL ANALYSIS REPORT

Sample Rating Trend



F/V ARCTIC FURY

Fluid MOBIL DELVAC MX 15W40 (--- QTS)

DIAGNOSIS

Recommendation

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.

Fluid Condition

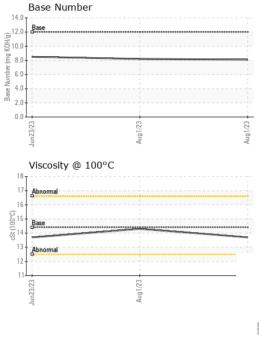
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

				Aug2023 Aug20		
SAMPLE INFORM	ΛΑΤΙΟΝ	method	limit/base	current	history1	history2
Sample Number		Client Info		PE0001208	PE0001209	PE0001211
Sample Date		Client Info		01 Aug 2023	01 Aug 2023	23 Jun 2023
Machine Age	hrs	Client Info		13230	25360	12733
Oil Age	hrs	Client Info		855	540	642
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATIO	N	method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>25	3	4	2
Chromium	ppm	ASTM D5185m	>5	<1	0	0
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	1	0	2
Lead	ppm	ASTM D5185m	>10	0	<1	<1
Copper	ppm	ASTM D5185m	>20	<1	<1	<1
Tin	ppm	ASTM D5185m	>5	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 119	history1 113	history2 120
	ppm ppm		limit/base			
Boron		ASTM D5185m	limit/base	119	113	120
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	119 0	113 0	120 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11	113 0 11	120 0 14
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11 <1	113 0 11 <1	120 0 14 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11 <1 477	113 0 11 <1 595	120 0 14 <1 375
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11 <1 477 1622	113 0 11 <1 595 1814	120 0 14 <1 375 1807
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11 <1 477 1622 789	113 0 11 <1 595 1814 856	120 0 14 <1 375 1807 807
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	119 0 11 <1 477 1622 789 950	113 0 11 <1 595 1814 856 1069	120 0 14 <1 375 1807 807 972
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		119 0 11 <1 477 1622 789 950 3360	113 0 11 <1 595 1814 856 1069 4042	120 0 14 <1 375 1807 807 972 3501
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	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	limit/base	119 0 11 <1 477 1622 789 950 3360 current	113 0 11 <1 595 1814 856 1069 4042 history1	120 0 14 <1 375 1807 807 972 3501 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	limit/base >25	119 0 11 <1 477 1622 789 950 3360 current 5	113 0 11 <1 595 1814 856 1069 4042 history1 6	120 0 14 <1 375 1807 807 972 3501 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	limit/base >25	119 0 11 <1 477 1622 789 950 3360 current 5 <1 5	113 0 11 <1 595 1814 856 1069 4042 history1 6 2	120 0 14 <1 375 1807 807 972 3501 history2 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	119 0 11 <1 477 1622 789 950 3360 Current 5 <1 5	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	119 0 11 <1 477 1622 789 950 3360 <u>current</u> 5 <1 5 <1	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4 4	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4 4 kistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	119 0 11 <1 477 1622 789 950 3360 <u>current</u> 5 <1 5 < <u>current</u> 0.1	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4 4 4 0.3	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4 2 4 1 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	119 0 11 <1 477 1622 789 950 3360 <u>current</u> 5 <1 5 <1 5 <u>current</u> 0.1 7.6 19.0	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4 4 <u>history1</u> 0.3 7.5	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4 2 4 history2 0.1 7.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >20 20	119 0 11 <1 477 1622 789 950 3360 <u>current</u> 5 <1 5 <1 5 <u>current</u> 0.1 7.6 19.0	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4 4 4 0.3 7.5 18.8	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4 2 4 4 <u>history2</u> 0.1 7.3 20.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	limit/base >25 >20 limit/base >20 >30 limit/base	119 0 11 <1 477 1622 789 950 3360 Current 5 <1 5 <1 5 Current 0.1 7.6 19.0 Current	113 0 11 <1 595 1814 856 1069 4042 history1 6 2 4 4 0.3 7.5 18.8 history1	120 0 14 <1 375 1807 807 972 3501 history2 4 2 4 2 4 history2 0.1 7.3 20.5 history2



OIL ANALYSIS REPORT

VISUAL



	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	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Aug1/23 Aug1/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Aug	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
	Free Water		*Visual		NEG	NEG	NEG
	FLUID PROPER		method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445		13.7	14.3	13.7
	GRAPHS						
	Ferrous Alloys						
2	10 iron						
Aug1/23	8 - chromium						
4							
	u d						
	4						
	2						
	0	Jana Contraction of the local division of th					
	Jun 23/23	Aug 1/23		Aug1/23			
	,			Au			
	Non-ferrous Meta	ls					
	copper						
	8 - second lead						
	ud d						
	4						
	2						
	2						
		2					
	Jun23/23	Aug1/23		Aug 1/23			
		A		\triangleleft			
	Viscosity @ 100°C	2			Base Number		
	Viscosity @ 100°C			14.0	T		
	Viscosity @ 100°C	C		12.0	Base Number		
	Viscosity @ 100°C	5		12.0	T		
	Viscosity @ 100°C	5		12.0	T		
	Viscosity @ 100°C			12.0	T		
	Viscosity @ 100°C			12.0	T		
	Viscosity @ 100°C				T		
	Viscosity @ 100°C			12.0. (B)HOU W W B0.0 B0.0 B0.0 B0.0 B0.0 B0.0 B0.0 B0.0	Base		
	Viscosity @ 100°C			12.0. (B)HOU W W B0.0 B0.0 B0.0 B0.0 B0.0 B0.0 B0.0 B0.0	Base	01/23	
	Viscosity @ 100°C	Aug 1/23		12.0- (9)HOX HOX BU 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 39UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0- 30UHOX 8.0	T	Aug 1/23	
Laboratory Sample No. Lab Number Unique Number Test Package	Viscosity @ 100°C	501 Madis Received Diagnose Diagnost I Tests: F	l : 167 ed : 187 ician : Sea T-IR, ICP, KV	12.0 (Hoy 0) Hoy 0)	EXECUTION N	THE 400 Contact: Se	FURY GROU 5 20TH AVE SEATTLE, V US 981 ervice Manag
Sample No. Lab Number Unique Numbe	Viscosity @ 100°C	501 Madis Received Diagnose Diagnost I Tests: F <i>rice at 1-8</i> 0	l : 16 / ed : 18 / ician : Sea T-IR, ICP, K\ <i>00-237-136</i> 9	12.0 (Hoy Du) 12.0 (Hoy Du) 12.0 (Hoy Du) 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	EXECUTION N	THE 400	5 20TH AVE SEATTLE, V US 981 ervice Manag

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Contact/Location: Service Manager - FURSEA