

## **OIL ANALYSIS REPORT**

## **Propulsion** 12E05A#02 Azipod arrière (S/N 05298.1.S.PR1-P111) Component

**Hydraulic System** 

ESSO NUTO H ISO 46 (--- 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.

### Wear

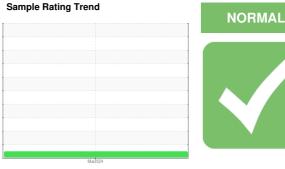
All component wear rates are normal.

#### Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

#### Fluid Condition

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





SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0878508		
Sample Date		Client Info		20 Mar 2024		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		Not Changd		
Sample Status				NORMAL		
CONTAMINATION	٧	method	limit/base	current	history1	history2
Water		WC Method	>0.05	NEG		
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>20	<1		
Chromium	ppm	ASTM D5185(m)	>10	0		
Nickel	ppm	ASTM D5185(m)	>10	0		
Titanium	ppm	ASTM D5185(m)		0		
Silver	ppm	ASTM D5185(m)		0		
Aluminum	ppm	ASTM D5185(m)	>10	0		
Lead	ppm	ASTM D5185(m)	>20	0		
Copper	ppm	ASTM D5185(m)	>20	<1		
Tin	ppm	ASTM D5185(m)	>10	0		
Antimony	ppm	ASTM D5185(m)		0		
Vanadium	ppm	ASTM D5185(m)		0		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method	limit/base	current	history1	history2
		method	iiiiii/base	Current	nistory i	mstoryz
Boron	ppm	ASTM D5185(m)	0	0		
	ppm ppm		0			
Boron		ASTM D5185(m)	0	0		
Boron Barium Molybdenum Manganese	ppm	ASTM D5185(m) ASTM D5185(m)	0	0 0		
Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0	0 0 0		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	0 0 0	0 0 0 0		
Boron Barium Molybdenum Manganese Magnesium	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)	0 0 0 5	0 0 0 <1		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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)	0 0 0 5 50	0 0 0 <1 54		   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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)	0 0 0 5 50 330	0 0 0 <1 54 331 429 5581		   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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)	0 0 0 5 50 330 410	0 0 0 <1 54 331 429		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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)	0 0 0 5 50 330 410	0 0 0 <1 54 331 429 5581		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	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)	0 0 0 5 50 330 410 2700	0 0 0 <1 54 331 429 5581 <1		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	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)	0 0 0 5 50 330 410 2700	0 0 0 <1 54 331 429 5581 <1 vurrent	       history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	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 5 50 330 410 2700	0 0 0 <1 54 331 429 5581 <1 <1 current 0	      history1 	      history2 
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 5 50 330 410 2700 imit/base >15	0 0 0 <1 54 331 429 5581 <1 current 0 0	      history1 	       history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 5 50 330 410 2700 <b>limit/base</b> >15 >20	0 0 0 <1 54 331 429 5581 <1 <1 <b>current</b> 0 0 0	      history1  	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 5 50 330 410 2700 <b>imit/base</b> >15 >20 <b>imit/base</b>	0 0 0 <1 54 331 429 5581 <1 current 0 0 0 0 0 0	      history1   history1	      history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 5 50 330 410 2700 <b>Imit/base</b> >15 >20 <b>Imit/base</b> >20	0 0 0 <1 54 331 429 5581 <1 current 0 0 0 0 0 0 0 0 0 876	      history1  history1  history1	      history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D5185(m)	0 0 0 5 50 330 410 2700 2700 1 1 1 1 1 5 20 2 1 1 1 1 1 2 20 2 1 1 1 1 2 20 2 1 1 1 2 20 2 1 2 1	0 0 0 (0 54 331 429 5581 <1 <b>current</b> 0 0 0 0 0 0 <b>current</b> 876 281	      history1  history1  history1	      history2    history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D76477 ASTM D7647	0 0 0 5 50 330 410 2700 2700 <b>imit/base</b> >15 >20 <b>imit/base</b> >5000 >1300 >160	0 0 0 (0 <1 54 331 429 5581 <1 <i>current</i> 0 0 0 0 0 0 <i>current</i> 876 281 54	       history1  history1	      history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Potassium Particles >4µm Particles >14µm Particles >21µm	ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm   ppm	ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647	0 0 0 5 50 330 410 2700 2700 <b>imit/base</b> >15 >20 <b>imit/base</b> >5000 >1300 >160 >40	0 0 0 (0 (1) 54 331 429 5581 <1 (1) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		       history2  history2  history2

Contact/Location: Erick Dube - AMUNDSEN



# **OIL ANALYSIS REPORT**

Acid Number (AN)		method	limit/base	current	history1	history2
	mg KOH/g	ASTM D974*	0.45	0.41		
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE		
Yellow Metal	scalar	Visual*	NONE	NONE		
Precipitate	scalar	Visual*	NONE	NONE		
Silt	scalar	Visual*	NONE	NONE		
Debris	scalar	Visual*	NONE	NONE		
	scalar					
			20.00			
			limit/base			history2
	Ð	method	limit/base	current	nistory i	history2
Color					no image	no image
Bottom					no image	no image
GRAPHS						
Ferrous Alloys			101 500	Particle Count		
10 iron ]						ľ
E 5-			122,880	Severe		-1
			30,720	F		-1
0			4Z (E 7,680	Abnormal		-1
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			2 0	4μ <u>6</u> μ	14μ 21μ	38µ 71µ
55 T			影0.60			
50 + Base			오 같 0.40	Base		
15 45 <b>Abnormal</b>			e 0 20			
40-			UNU PLACE			
			Ac. Ac.	0/24		
Mar20/24			Mar20/24	Mar20/24		
	Precipitate Silt Debris Sand/Dirt Appearance Odor Emulsified Water Free Water Free Water Fluid PROPERT Visc @ 40°C SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys GRAPHS Ferrous Alloys Non-ferrous Metall Source Viscosity @ 40°C	Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Free Water scalar Free Water cst SAMPLE IMAGES Color Color Bottom GRAPHS Ferrous Alloys Visc Q 40°C cst SAMPLE IMAGES Visc Q 40°C cst Source cst Non-ferrous Metals Viscosity Q 40°C Viscosity Q 40°C	Precipitate scalar Visual* Silt scalar Visual* Debris scalar Visual* Sand/Dirt scalar Visual* Appearance scalar Visual* Odor scalar Visual* Emulsified Water scalar Visual* Free	Precipitate scalar Visual* NONE Silt scalar Visual* NONE Debris scalar Visual* NONE Sand/Dirt scalar Visual* NORML Appearance scalar Visual* NORML Odor scalar Visual* NORML Emulsified Water scalar Visual* >0.05 Free Water scalar Visual* >0.05 Free Water scalar Visual* Visua	Precipitate scalar Visual* NONE NONE Silt scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORML NORML Odor scalar Visual* NORML NORML MORML NORML Emulsified Water scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML SAMPLE IMAGES method limit/base current Visc @ 40°C cSt ASTM D7279(m) 46 41.9 SAMPLE IMAGES method limit/base current Color GRAPHS Ferrous Alloys 00 00 00 00 00 00 00 00 00 0	Precipitate scalar Visual* NONE NONE Sitt scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORML NORML Odor scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML Emulsified Water scalar Visual* NORML NORML Free Water scalar Visual* NORML NORML Free Water scalar Visual* NORML NORML FLUID PROPERTIES method imit/base current history1 Visc @ 40°C cSt ASTM07278(m) 46 41.9 SAMPLE IMAGES method imit/base current history1 Color no image Retro imit/base current no image no image Non-ferrous Metals 0 0 0 0 0 0 0 0 0 0 0 0 0

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