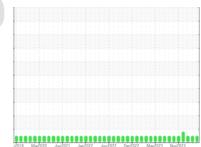


# **OIL ANALYSIS REPORT**

Sample Rating Trend







GAS **GT-2325A (S/N HPA GG)** Turbine Turbine

**MOBIL JET OIL II (110 GAL)** 

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

## Contamination

There is no indication of any contamination in the fluid. 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 fluid is suitable for further service.

Sample Date   Client Info   0		52013 Mar2020 Jun2021 Jan2022 Jun2022 Dec2022 Mar2023 Nov2023						
Sample Date   Client Info   O	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   0   0   0   0   0   0   0   0   0	Sample Number		Client Info		HLC0003213	HLC0003145	HLC0003175	
Oil Age	Sample Date		Client Info		31 Mar 2024	07 Feb 2024	07 Jan 2024	
Cilient Info   N/A   N/A   N/A   N/A   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		0	0	178783	
NORMAL   NORMAL   NORMAL	Oil Age	hrs	Client Info		0	0	0	
Water   WC Method   S.1   NEG   NEG   NEG   NEG	Oil Changed		Client Info		N/A	N/A	N/A	
Water         WC Method         >.1         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >15         <1	Sample Status				NORMAL	NORMAL	NORMAL	
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >15         <1         0         0           Chromium         ppm         ASTM D5185m         >2         <1         0         0           Nickel         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         <1         0         0           Aluminum         ppm         ASTM D5185m         <1         0         0           Aluminum         ppm         ASTM D5185m         1         0         0           Lead         ppm         ASTM D5185m         1         0         0           Copper         ppm         ASTM D5185m         >5         <1         0         0           Vanadium         ppm         ASTM D5185m         >5         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm <td< th=""><th>CONTAMINATION</th><th>١</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td<>	CONTAMINATION	١	method	limit/base	current	history1	history2	
Iron	Water		WC Method	>.1	NEG	NEG	NEG	
Chromium         ppm         ASTM D5185m         >4         <1	WEAR METALS		method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>15	<1	0	0	
Titanium	Chromium		ASTM D5185m	>4	<1	0	0	
Silver         ppm         ASTM D5185m         <1	Nickel	ppm	ASTM D5185m	>2	<1	0	0	
Aluminum         ppm         ASTM D5185m         >10         1         0         0           Lead         ppm         ASTM D5185m         1         0         0           Copper         ppm         ASTM D5185m         >5         <1         0         0           Tin         ppm         ASTM D5185m         >5         1         2         0           Vanadium         ppm         ASTM D5185m         <1         0         0         0           Cadmium         ppm         ASTM D5185m         1         0         0         0           ADDITIVES         method         limit/base         current         history2         bistory2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         0         0         0           Mangaesium         ppm         ASTM D5185m         <1         0         0         0           Calcium         ppm         ASTM D5185m         3         0         0         0	Titanium	ppm	ASTM D5185m		<1	0	0	
Lead         ppm         ASTM D5185m         1         0         0           Copper         ppm         ASTM D5185m         >5         <1         0         0           Tin         ppm         ASTM D5185m         >5         1         2         0           Vanadium         ppm         ASTM D5185m         <1         0         0         0           Cadmium         ppm         ASTM D5185m         1         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Manganesium         ppm         ASTM D5185m         <1         0         0         0           Magnesium         ppm         ASTM D5185m         <1         0         0         0           Phosphorus         ppm         ASTM D5185m         2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Zinc         p	Silver	ppm	ASTM D5185m		<1	0	0	
Copper         ppm         ASTM D5185m         >5         <1	Aluminum	ppm	ASTM D5185m	>10	1	0	0	
Tin ppm ASTM D5185m >5 1 2 0 Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m		1	0	0	
Vanadium         ppm         ASTM D5185m         <1	Copper	ppm	ASTM D5185m	>5	<1	0	0	
Cadmium         ppm         ASTM D5185m         1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         0         0           Magnesium         ppm         ASTM D5185m         <1         0         0           Magnesium         ppm         ASTM D5185m         <1         0         0           Calcium         ppm         ASTM D5185m         3         0         0           Phosphorus         ppm         ASTM D5185m         2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sodium         ppm         ASTM D5185m         0         0         0           Sodium <t< th=""><th>Tin</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;5</th><th>1</th><th>2</th><th>0</th></t<>	Tin	ppm	ASTM D5185m	>5	1	2	0	
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0           Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         0         0           Magnesium         ppm         ASTM D5185m         <1         0         0           Magnesium         ppm         ASTM D5185m         3         0         0           Calcium         ppm         ASTM D5185m         2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sodium         ppm         ASTM D5185m         0         0         0           Sodium         ppm         ASTM D5185m         >15         <1         0         0           Potassium         ppm         ASTM D5185m         0         0         0         0      <	Vanadium	ppm	ASTM D5185m		<1	0	0	
Boron   ppm   ASTM D5185m   0   0   0   0   0	Cadmium	ppm	ASTM D5185m		1	0	0	
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         <1         0         0           Manganese         ppm         ASTM D5185m         <1         0         0           Magnesium         ppm         ASTM D5185m         <1         0         0           Calcium         ppm         ASTM D5185m         <2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         >15         <1         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1         0         0           Sodium         ppm         ASTM D5185m         >20         <1         0         0           Potassium         ppm         ASTM D5185m         >20         <1         0         0           FLUID CLEANLINESS         method         limit/base	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         <1	Boron	ppm	ASTM D5185m		0	0	0	
Manganese         ppm         ASTM D5185m         <1	Barium	ppm	ASTM D5185m		0	0	0	
Magnesium         ppm         ASTM D5185m         <1	Molybdenum	ppm	ASTM D5185m		<1	0	0	
Calcium         ppm         ASTM D5185m         3         0         0           Phosphorus         ppm         ASTM D5185m         2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1         0         0           Sodium         ppm         ASTM D5185m         0         0         0         0           Potassium         ppm         ASTM D5185m         >20         <1         0         0           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >1300         66         160         610           Particles >514μm         ASTM D7647         >160         9         13         50           Particles >21μm         ASTM D7647         >40         3         5         13           Particles >71μm         ASTM D7647 <th>Manganese</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>&lt;1</th> <th>0</th> <th>0</th>	Manganese	ppm	ASTM D5185m		<1	0	0	
Phosphorus         ppm         ASTM D5185m         2598         2595         2580           Zinc         ppm         ASTM D5185m         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1	Magnesium	ppm	ASTM D5185m		<1	0	0	
Zinc         ppm         ASTM D5185m         0         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1	Calcium	ppm	ASTM D5185m		3	0	0	
Sulfur         ppm         ASTM D5185m         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1         0         0           Sodium         ppm         ASTM D5185m         0         0         0         0           Potassium         ppm         ASTM D5185m         >20         <1         0         0           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         264         1017         3082           Particles >6µm         ASTM D7647         >1300         66         160         610           Particles >14µm         ASTM D7647         >160         9         13         50           Particles >21µm         ASTM D7647         >40         3         5         13           Particles >38µm         ASTM D7647         >10         0         0         1           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)	Phosphorus	ppm	ASTM D5185m		2598	2595	2580	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         <1         0         0           Sodium         ppm         ASTM D5185m         0         0         0         0           Potassium         ppm         ASTM D5185m         >20         <1         0         0           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         264         1017         3082           Particles >6µm         ASTM D7647         >1300         66         160         610           Particles >14µm         ASTM D7647         >160         9         13         50           Particles >21µm         ASTM D7647         >40         3         5         13           Particles >38µm         ASTM D7647         >10         0         0         1           Particles >71µm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/14         15/13/10         17/14/11         19/16/13	Zinc	ppm	ASTM D5185m		0	0	0	
Silicon         ppm         ASTM D5185m         >15         <1	Sulfur	ppm	ASTM D5185m		0	0	0	
Sodium         ppm         ASTM D5185m         0         0         0         0           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINANTS		method	limit/base	current	history1	history2	
Potassium         ppm         ASTM D5185m         >20         <1	Silicon	ppm	ASTM D5185m	>15	<1	0	0	
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         264         1017         3082           Particles >6μm         ASTM D7647         >1300         66         160         610           Particles >14μm         ASTM D7647         >160         9         13         50           Particles >21μm         ASTM D7647         >40         3         5         13           Particles >38μm         ASTM D7647         >10         0         0         1           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/14         15/13/10         17/14/11         19/16/13	Sodium	ppm	ASTM D5185m		0	0	0	
Particles >4μm       ASTM D7647       264       1017       3082         Particles >6μm       ASTM D7647       >1300       66       160       610         Particles >14μm       ASTM D7647       >160       9       13       50         Particles >21μm       ASTM D7647       >40       3       5       13         Particles >38μm       ASTM D7647       >10       0       0       1         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/14       15/13/10       17/14/11       19/16/13	Potassium	ppm	ASTM D5185m	>20	<1	0	0	
Particles >6μm         ASTM D7647         >1300         66         160         610           Particles >14μm         ASTM D7647         >160         9         13         50           Particles >21μm         ASTM D7647         >40         3         5         13           Particles >38μm         ASTM D7647         >10         0         0         1           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/14         15/13/10         17/14/11         19/16/13	FLUID CLEANLIN	ESS	method	limit/base	current	history1	history2	
Particles >14μm       ASTM D7647       >160       9       13       50         Particles >21μm       ASTM D7647       >40       3       5       13         Particles >38μm       ASTM D7647       >10       0       0       1         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/14       15/13/10       17/14/11       19/16/13	Particles >4µm		ASTM D7647		264	1017	3082	
Particles >21μm       ASTM D7647       >40       3       5       13         Particles >38μm       ASTM D7647       >10       0       0       1         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/14       15/13/10       17/14/11       19/16/13	Particles >6µm		ASTM D7647	>1300	66	160	610	
Particles >38μm       ASTM D7647       >10       0       0       1         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/14       15/13/10       17/14/11       19/16/13	Particles >14µm		ASTM D7647	>160	9	13	50	
Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/14       15/13/10       17/14/11       19/16/13	Particles >21µm		ASTM D7647	>40	3	5	13	
Oil Cleanliness ISO 4406 (c) >/17/14 <b>15/13/10</b> 17/14/11 19/16/13	Particles >38µm		ASTM D7647	>10	0	0	1	
· ·	Particles >71µm		ASTM D7647		0	0		
FLUID DEGRADATION method limit/base current history1 history2	Oil Cleanliness		ISO 4406 (c)	>/17/14	15/13/10	17/14/11	19/16/13	
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	

Acid Number (AN)

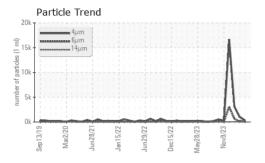
mg KOH/g ASTM D8045 0.03

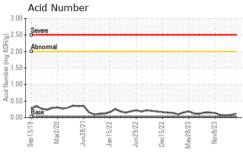
0.078

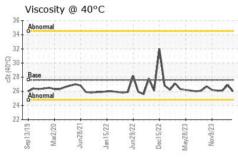
0.07 Contact/Location: PERRY NEEL - BPENOR

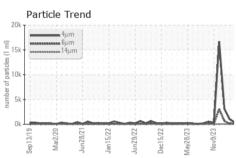


# **OIL ANALYSIS REPORT**









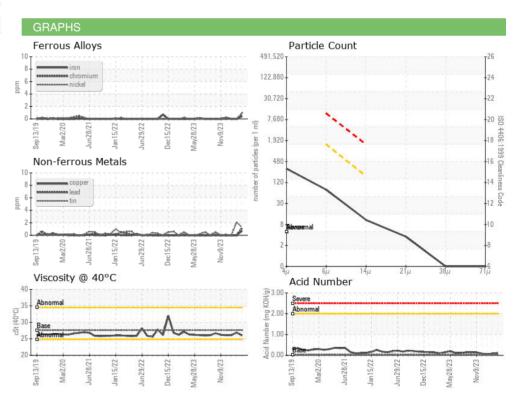
VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
	TIEC	mothod	limit/bass	ourropt	hiotonyi	hiotom/2

I LOID I HOI LITTILO							
Visc @ 40°C	cSt	ASTM D445	27.6	26.0	26.9	26.1	

SAMPLE IMAGES

Color

**Bottom** 







Certificate 12367

Laboratory Sample No.

Test Package : IND 2

: HLC0003213 Lab Number : 06146554 Unique Number : 10976632

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received : 11 Apr 2024 **Tested** : 12 Apr 2024

Diagnosed : 15 Apr 2024 - Angela Borella

To discuss this sample report, contact Customer Service at 1-800-237-1369.

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

HILCORP NORTHSTAR FACILITY

PRUDHOE BAY, AK US 99734 Contact: PERRY NEEL

pneel@hilcorp.com T: (907)670-3514

F: (907)659-5377 Contact/Location: PERRY NEEL - BPENOR