

## **OIL ANALYSIS REPORT**

# CAT MARTA PERRY 1 (S/N 3WR00482)

Component Natural Gas Engine Fluid

HPN GEO 40 PLUS (45 GAL)

## DIAGNOSIS

### A Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor. ( Customer Sample Comment: HPNGEO40PLUS )

#### 🔺 Wear

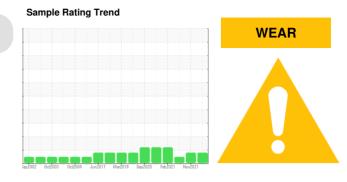
The copper level has decreased, but is still abnormal. All other component wear rates are normal.

### 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 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		WC0923566	RP195115	HPL008926
Sample Date		Client Info		01 May 2024	30 Nov 2021	26 Jun 2021
Machine Age	hrs	Client Info		35716	28645	27622
Oil Age	hrs	Client Info		3159	1700	677
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				ABNORMAL	ABNORMAL	NORMAL
CONTAMINATION	٧	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>50	10	9	6
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>3	0	<1	<1
Aluminum	ppm	ASTM D5185m		4	2	1
Lead	ppm	ASTM D5185m	>30	2	1	<1
Copper	ppm	ASTM D5185m	>35	_ <u> </u>	▲ 222	90
Tin	ppm	ASTM D5185m	>4	1	<1	<1
Antimony	ppm	ASTM D5185m			0	0
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		1	3	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m		1 0	3 0	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4	3 0 4	2 0 1
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4 <1	3 0 4 <1	2 0 1 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4 <1 19	3 0 4 <1 15	2 0 1 <1 9
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4 <1 19 4619	3 0 4 <1 15 4568	2 0 1 <1 9 3663
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		1 0 4 <1 19 4619 378	3 0 4 <1 15 4568 308	2 0 1 <1 9 3663 278
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4 <1 19 4619 378 467	3 0 4 <1 15 4568 308 388	2 0 1 <1 9 3663 278 387
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		1 0 4 <1 19 4619 378 467 15426	3 0 4 <1 15 4568 308 388 12056	2 0 1 <1 9 3663 278 387 13097
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	1 0 4 <1 19 4619 378 467 15426 current	3 0 4 <1 15 4568 308 388 12056 history1	2 0 1 <1 9 3663 278 387 13097 history2
Boron Barium Molybdenum Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	limit/base	1 0 4 <1 19 4619 378 467 15426 <u>current</u> 10	3 0 4 <1 15 4568 308 388 12056 history1 10	2 0 1 <1 9 3663 278 387 13097 history2 2
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 <b>method</b> ASTM D5185m	limit/base >+100	1 0 4 <1 19 4619 378 467 15426 <u>current</u> 10 0	3 0 4 <1 15 4568 308 388 12056 history1 10 10	2 0 1 <1 9 3663 278 387 13097 history2 2 <1
Boron Barium Molybdenum Maganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	limit/base >+100	1 0 4 <1 19 4619 378 467 15426 <u>current</u> 10	3 0 4 <1 15 4568 308 388 12056 history1 10	2 0 1 <1 9 3663 278 387 13097 history2 2
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 <b>method</b> ASTM D5185m	limit/base >+100	1 0 4 <1 19 4619 378 467 15426 <u>current</u> 10 0	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 history1	2 0 1 <1 9 3663 278 387 13097 history2 2 <1
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 >+100 >20	1 0 4 <1 19 4619 378 467 15426 current 10 0 3 3 current 0.1	3 0 4 <1 15 4568 308 388 12056 history1 10 10 10 <1	2 0 1 <1 9 3663 278 387 13097 history2 2 <1 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >+100 >20 limit/base	1 0 4 <1 19 4619 378 467 15426 current 10 0 3 3	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 history1	2 0 1 <1 9 3663 278 387 13097 history2 2 <1 <1 <1 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >+100 >20 limit/base	1 0 4 <1 19 4619 378 467 15426 current 10 0 3 3 current 0.1	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 10 <1 history1 0.1	2 0 1 <1 9 3663 278 387 13097 history2 2 <1 <1 <1 <1 history2 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 >+100 >20 limit/base	1 0 4 <1 19 4619 378 467 15426 current 10 0 3 current 0.1 1.1	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 10 <1 0.1 8.4	2 0 1 <1 9 3663 278 387 13097 history2 2 2 <1 <1 <1 history2 0.1 7.7
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	limit/base >+100 >20 limit/base >20 >20 >30	1 0 4 (-1) 19 4619 378 467 15426 current 10 0 3 current 0.1 11.1 44.2 current	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 10 <1 10 <1 0.1 8.4 31.2 history1	2 0 1 <1 9 3663 278 387 13097 history2 2 <1 <1 <1 <1 history2 0.1 7.7 29.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Solicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	limit/base >+100 >20 limit/base >20 >30 limit/base	1 0 4 (-1) 19 4619 378 467 15426 current 10 0 3 current 0.1 11.1 44.2 current 26.1	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 10 <1 0.1 8.4 31.2 history1 18.2	2 0 1 <1 9 3663 278 387 13097 history2 2 <1 <1 <1 history2 0.1 7.7 29.3 history2 17
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	limit/base >+100 >20 limit/base >20 >30 limit/base	1 0 4 (-1) 19 4619 378 467 15426 current 10 0 3 current 0.1 11.1 44.2 current	3 0 4 <1 15 4568 308 388 12056 history1 10 10 <1 10 <1 10 <1 0.1 8.4 31.2 history1	2 0 1 3 3663 278 387 13097 history2 2 2 3 1 3 0.1 7.7 29.3 history2



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history2

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Precipitate

Silt

Debris

Odor

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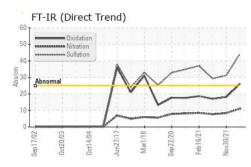
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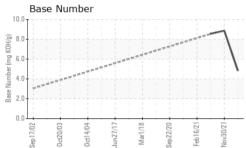
Sep 1

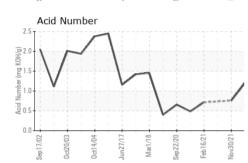
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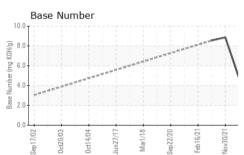
Sand/Dirt

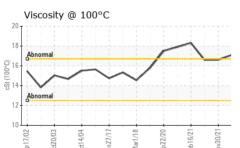
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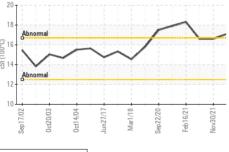


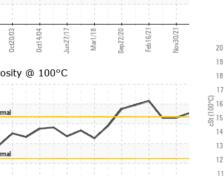


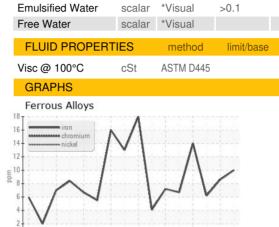












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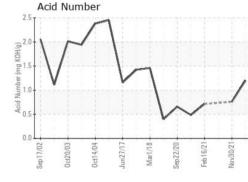
eb16/2

0ct14/04

Oct14

Viscosity @ 100°C

Non-ferrous Metals





0ct14/04 Sep17/02 Feb16/21 Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 ATLANTA GAS LIGHT CO. Sample No. : WC0923566 Received :09 May 2024 550 GEORGIA HWY 138 DEPT 1580 Lab Number : 06174036 Tested : 10 May 2024 RIVERDALE, GA Unique Number : 11020089 Diagnosed : 12 May 2024 - Don Baldridge US 30274 Test Package : IND 2 Contact: PATRICK GAREIS Certificate 12367 PGGAREIS@SOUTHERNCO.COM 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.

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Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: ATLRIV [WUSCAR] 06174036 (Generated: 05/12/2024 10:10:27) Rev: 1

Submitted By: PATRICK GAREIS

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