

OIL ANALYSIS REPORT

Area [W116501] **GENERAC RALEIGH MARSH MAINT** Component

Diesel Engine

SHELL ROTELLA T 15W40 (7 GAL)

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

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.



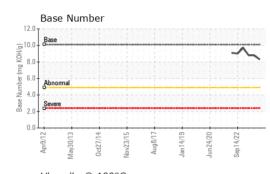


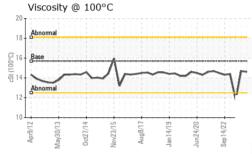
Sample Rating Trend

		r2012 May20		·						
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2				
Sample Number		Client Info		WC0812707	WC0812712	WC0770486				
Sample Date		Client Info		12 Sep 2023	06 Jun 2023	16 Mar 2023				
Machine Age	hrs	Client Info		199	394	0				
Oil Age	hrs	Client Info		0	0	0				
Oil Changed		Client Info		N/A	Not Changd	Changed				
Sample Status				NORMAL	NORMAL	ABNORMAL				
CONTAMINATION		method	limit/base	current	history1	history2				
Fuel		WC Method	>2.1	<1.0	0.3	6 .4				
Glycol		WC Method		NEG	NEG	NEG				
WEAR METALS		method	limit/base	current	history1	history2				
Iron	ppm	ASTM D5185m	>51	2	2	2				
Chromium	ppm	ASTM D5185m	>11	0	<1	<1				
Nickel	ppm	ASTM D5185m	>5	0	0	0				
Titanium	ppm	ASTM D5185m		28	25	<1				
Silver	ppm	ASTM D5185m	>3	0	0	0				
Aluminum	ppm	ASTM D5185m	>31	3	<1	1				
Lead	ppm	ASTM D5185m	>26	<1	<1	<1				
Copper	ppm	ASTM D5185m	>26	0	0	0				
Tin	ppm	ASTM D5185m	>4	<1	<1	0				
Vanadium	ppm	ASTM D5185m		<1	<1	0				
Cadmium	ppm	ASTM D5185m		0	0	0				
ADDITIVES		method	limit/base	current	history1	history2				
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 316	current 115	history1 117	history2 92				
	ppm ppm									
Boron		ASTM D5185m	316	115	117	92				
Boron Barium	ppm	ASTM D5185m ASTM D5185m	316 0.0	115 0	117 0	92 0				
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0	115 0 55	117 0 53	92 0 21				
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2	115 0 55 0	117 0 53 <1	92 0 21 <1				
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24	115 0 55 0 225	117 0 53 <1 244	92 0 21 <1 523				
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292	115 0 55 0 225 1968	117 0 53 <1 244 2097	92 0 21 <1 523 1479				
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	316 0.0 1.2 24 2292 1064	115 0 55 0 225 1968 1059	117 0 53 <1 244 2097 1059	92 0 21 <1 523 1479 979				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160	115 0 55 0 225 1968 1059 1259	117 0 53 <1 244 2097 1059 1271	92 0 21 <1 523 1479 979 1172				
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	316 0.0 1.2 24 2292 1064 1160 4996	115 0 55 0 225 1968 1059 1259 4223	117 0 53 <1 244 2097 1059 1271 4785	92 0 21 <1 523 1479 979 1172 4439				
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	316 0.0 1.2 24 2292 1064 1160 4996	115 0 55 0 225 1968 1059 1259 4223 current	117 0 53 <1 244 2097 1059 1271 4785	92 0 21 <1 523 1479 979 1172 4439 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	316 0.0 1.2 24 2292 1064 1160 4996 <i>limit/base</i>	115 0 55 0 225 1968 1059 1259 4223 current 6	117 0 53 <1 244 2097 1059 1271 4785 history1 7	92 0 21 <1 523 1479 979 1172 4439 history2 6				
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	316 0.0 1.2 24 2292 1064 1160 4996 limit/base >22 >31	115 0 55 0 225 1968 1059 1259 4223 current 6 1	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2	92 0 21 <1 523 1479 979 1172 4439 history2 6 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	316 0.0 1.2 24 2292 1064 1160 4996 limit/base >22 >31 >20	115 0 55 0 225 1968 1059 1259 4223 <i>current</i> 6 1 2	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 1	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2				
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	316 0.0 1.2 24 2292 1064 1160 4996 limit/base >22 >31 >20 limit/base	115 0 55 0 225 1968 1059 1259 4223 current 6 1 2 2	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 1 1 history1	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2 2 history2				
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	316 0.0 1.2 24 2292 1064 1160 4996 limit/base >22 >31 >20 limit/base >3	115 0 55 0 225 1968 1059 1259 4223 <i>current</i> 6 1 2 <i>current</i> 0	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 1 7 2 1 <i>history1</i> 0.1	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2 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	316 0.0 1.2 24 2292 1064 1160 4996 <i>limit/base</i> >22 >31 >20 <i>limit/base</i> >3 >20	115 0 55 0 225 1968 1059 1259 4223 current 6 1 2 current 0 6.7	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 1 7 2 1 history1 0.1 7.2	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2 history2 0.1 6.4				
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	316 0.0 1.2 24 2292 1064 1160 4996 imit/base >32 >31 >20 imit/base >3 >20	115 0 55 0 225 1968 1059 1259 4223 <u>current</u> 6 1 2 <u>current</u> 0 6.7 17.6	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 1 1 <i>history1</i> 0.1 7.2 17.9	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2 6 1 2 2 history2 0.1 6.4 17.5				
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 D7624	316 0.0 1.2 24 2292 1064 1160 4996 imit/base >22 >31 >20 imit/base >3 >20 >30 imit/base	115 0 55 0 225 1968 1059 1259 4223 <i>current</i> 6 1 2 <i>current</i> 0 6.7 17.6	117 0 53 <1 244 2097 1059 1271 4785 history1 7 2 2 1 <i>history1</i> 0.1 7.2 17.9 history1	92 0 21 <1 523 1479 979 1172 4439 history2 6 1 2 6 1 2 0.1 6.4 1 2 0.1 6.4 17.5 history2				

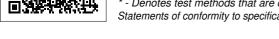


OIL ANALYSIS REPORT





			VISUAL		method	limit/bas	se	current	ł	nistory	1	hi	story2
			White Metal	scalar	*Visual	NONE		NONE	NC	ONE		NO	NE
		~~	Yellow Metal	scalar	*Visual	NONE		NONE	NC	ONE		NO	NE
			Precipitate	scalar	*Visual	NONE		NONE	N	ONE		NO	NE
			Silt	scalar	*Visual	NONE		NONE	N	ONE		NO	NE
			Debris	scalar	*Visual	NONE		NONE		ONE		NO	
			Sand/Dirt	scalar	*Visual	NONE		NONE	N	ONE		NO	
Jov23/15 - Aug8/17 -	£/20	¥/22	Appearance	scalar	*Visual	NORML		NORML		ORML			RML
Nov23/15 Aug8/17	Jun24/20	Sep14/22	Odor	scalar	*Visual	NORML		NORML		ORML			RML
			Emulsified Water	scalar	*Visual	>0.21		NEG		EG		NE	
°C			Free Water	scalar	*Visual			NEG	NE			NE	
											_		
			FLUID PROPERT		method	limit/bas	se	current		history			story2
1	~~	~ -	Visc @ 100°C	cSt	ASTM D445	15.7		14.6	14	7		11.8	3
V		V	GRAPHS										
		1	Iron (ppm)				l 100т	_ead (ppm)					
5			d					Severe					
Nov23/15 Aug8/17	Jun24/20	di	150-				0.0						
N 7 1	5 7	Se mpm	100				40						
			50 - Abnormal				20	Abnormal					
			0				0						
			Apr9/12 May30/13 0ct27/14 Nov23/15	Aug8/17.	Jan 14/19	77/4	C 1/ D V	May30/13 0ct27/14	Nov23/15.	Aug8/17.	Jan 14/19	Jun24/20.	Sep 14/22
			Ap May3 Oct2 Nov2	Aug	Jan1 Jun2	dae	× ×	May3 Oct2	Novž	Aug	Jan1	Juni	Sep 1
			Aluminum (ppm)					Chromium (p	pm)				
			60 Severe	25 Severe				Severe		1111			
			40				201	⁷					+ + 4 4 4 4 4 4 4
		8	Abnormal				E 15 -	Abnormal			100000		
			20				101						
			10				5-						
			Apr9/12	Aug8/17 -	4/19 4/20	77/4	0	0/13	3/15	Aug8/17	- 61/ 1	4/20 -	ł/22
			Apr9/12 May30/13 0ct27/14	Aug	Jun24/20	dao	h a h	May30/13 0ct27/14	Nov23/15	Aug	Jan 14/19	Jun24/20	Sep14/22
			Copper (ppm)				5	Silicon (ppm)					
			¹⁵⁰ T 100000000000000000000000000000000000	1012111			⁴⁰						
			100 -		Gooodaaa		30 T	Severe					
		mqq					M 20 -	Abnormal					
			50				10-						
			Abnormal				10	~~		-	~	-	~
			/12 /13 /15	117	/19	77	10	/13	15	11	+61/	/20+	723
			Apr9/12 May30/13 0ct27/14	Aug8/17	Jan 14/19 Jun 24/20	77/4 I dae	CLORA	May30/13 0ct27/14	Nov23/15	Aug8/17	Jan 14/19	Jun24/20	Sep14/22
			Viscosity @ 100°C		, , ,	~	F	 Base Numbe				,	
			20 T			(B	12.0 T	Base					
			18 - Abnormal			Base Number (mg KOH/g)	10.0 -						~~
		-1100-C	16 Base			er (mg	8.0 6.0	AL					
		1 22	Abnormal		~~~	۳ <u>۲</u>	4.0 -	Abnormal			-		+ + + + + + + + + + + + + + + + + + + +
			12-			Sase /	2.0-	Severe					
			13 13 13 10 13 10 13 10 13 13 13 13 13 13 13 13 13 13 13 13 13	11	20 -		0.0	14			6	20	22
			Apr9/12 May30/13 0ct27/16 Nov23/15	Aug8/17	Jan 14/19 Jun 24/20	77/4 i dae	C 1/ DV	May30/13 0ct27/14	Nov23/15	Aug8/17	Jan 14/19	Jun24/20	Sep14/22
Certificate L2367 To discuss th	Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : WC0812707 Received : 27 Sep 2023 Lab Number : 05961957 Diagnosed : 28 Sep 2023 Unique Number : 10668508 Diagnostician : Wes Davis							NATIONAL POWER CORP 4541 PRESLYN DR RALEIGH, NC US 27616 Contact: BRANDON RICE brandon.rice@natpow.com					
			re outside of the ISO 1 fications are based on th				le (JC	CGM 106:2012	<u>2)</u>		F: (919)79	T: 90-9714



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