

OIL ANALYSIS REPORT



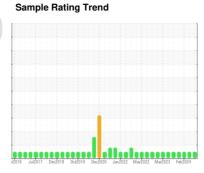
KEMP QUARRIES / RIVER VALLEY OZARK

WL112

Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)





DIAGNOSIS

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

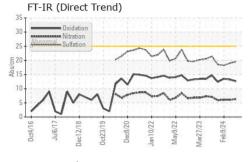
Fluid Condition

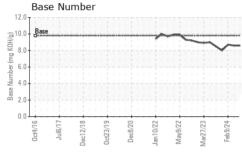
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

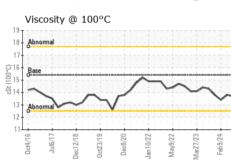
Sample Date	AMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 36272 35919 35658 Oil Age hrs Client Info 32626	nple Number		Client Info		PCA0109104	PCA0086925	PCA0084501
Oil Age hrs Client Info 32626 32627 161 161 161 161 161 161 161 161 161 161 161 162 161 161 162	mple Date		Client Info		17 May 2024	19 Mar 2024	09 Feb 2024
Oil Changed Sample Status Client Info N/A N/A N/A N/A N/A SAMPAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL 1.1.0 21.0 4.1	chine Age	nrs	Client Info		36272	35919	35658
Oil Changed Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history1 Fuel WC Method >5 <1.0	Age	nrs	Client Info		32626	32626	32626
CONTAMINATION method limit/base current history1 hit Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <t< th=""><th></th><th></th><th>Client Info</th><th></th><th>N/A</th><th>N/A</th><th>N/A</th></t<>			Client Info		N/A	N/A	N/A
Fuel					NORMAL	NORMAL	NORMAL
Water WC Method NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >100 29 24 19 Chromium ppm ASTM D5185m >20 1 <1	ONTAMINATIO	N	method	limit/base	current	history1	history2
Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >100 29 24 19 Chromium ppm ASTM D5185m >20 1 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 <1 Silver ppm ASTM D5185m >2 <1 0 <1 Aluminum ppm ASTM D5185m >2 <1 0 <1 Aluminum ppm ASTM D5185m >2 <1 0 <1 Lead ppm ASTM D5185m >330 8 4 3 1 Lead ppm ASTM D5185m >330 8 4 3 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1			WC Method	>5	<1.0	<1.0	<1.0
Second S	ter		WC Method	>0.2	NEG	NEG	NEG
Iron	col		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 1 <1	VEAR METALS		method	limit/base	current	history1	history2
Nickel	ı į	ppm	ASTM D5185m	>100	29	24	19
Titanium ppm ASTM D5185m >2 <1	romium	ppm	ASTM D5185m	>20	1	<1	<1
Silver ppm ASTM D5185m >2 <1	kel	ppm	ASTM D5185m	>2	0	<1	<1
Aluminum ppm ASTM D5185m >25 4 3 1 Lead ppm ASTM D5185m >40 1 2 2 Copper ppm ASTM D5185m >330 8 4 3 Tin ppm ASTM D5185m >15 <1 1 <1 <1 Vanadium ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1<	anium	ppm	ASTM D5185m	>2	<1	1	<1
Aluminum ppm ASTM D5185m >25 4 3 1 Lead ppm ASTM D5185m >40 1 2 2 Copper ppm ASTM D5185m >330 8 4 3 Tin ppm ASTM D5185m >15 <1 1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 </th <th></th> <th></th> <th></th> <th></th> <th><1</th> <th>0</th> <th><1</th>					<1	0	<1
Lead	minum r	ppm	ASTM D5185m	>25	4	3	1
Copper ppm ASTM D5185m >330 8 4 3 Tin ppm ASTM D5185m >15 <1 1 <1 <1 Vanadium ppm ASTM D5185m <1 <1 <1 <1 Cadmium ppm ASTM D5185m 0 <1 <1 <1 ADDITIVES method limit/base current history1 history2 history2 history2 history2 history2 history2 history2 history2 history3 history3 history3 history3 history3 history4 history3 history4			ASTM D5185m	>40	1	2	2
Tin ppm ASTM D5185m >15 <1			ASTM D5185m	>330	8	4	3
Vanadium ppm ASTM D5185m <1			ASTM D5185m	>15	<1		<1
Cadmium ppm ASTM D5185m 0 <1			ASTM D5185m		<1	<1	<1
Boron ppm ASTM D5185m 0 1 <1			ASTM D5185m		0	<1	<1
Barium ppm ASTM D5185m 0 0 1 0 Molybdenum ppm ASTM D5185m 60 60 62 57 Manganese ppm ASTM D5185m 0 <1	DDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 60 62 57 Manganese ppm ASTM D5185m 0 <1	on t	ppm	ASTM D5185m	0	1	<1	4
Manganese ppm ASTM D5185m 0 <1	ium p	opm	ASTM D5185m	0	0	1	0
Magnesium ppm ASTM D5185m 1010 950 903 884 Calcium ppm ASTM D5185m 1070 1133 1180 997 Phosphorus ppm ASTM D5185m 1150 1060 1082 913 Zinc ppm ASTM D5185m 1270 1250 1214 113 Sulfur ppm ASTM D5185m 2060 3639 3350 335 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation A	lybdenum p	opm .	ASTM D5185m	60	60	62	57
Calcium ppm ASTM D5185m 1070 1133 1180 997 Phosphorus ppm ASTM D5185m 1150 1060 1082 913 Zinc ppm ASTM D5185m 1270 1250 1214 113 Sulfur ppm ASTM D5185m 2060 3639 3350 335 CONTAMINANTS method limit/base current history1 his Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 his Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	nganese	opm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1060 1082 913 Zinc ppm ASTM D5185m 1270 1250 1214 113 Sulfur ppm ASTM D5185m 2060 3639 3350 335 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m 3 <1	gnesium p	opm	ASTM D5185m	1010	950	903	884
Zinc ppm ASTM D5185m 1270 1250 1214 113 Sulfur ppm ASTM D5185m 2060 3639 3350 335 CONTAMINANTS method limit/base current history1 his Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m 3 <1 <1 Potassium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 his Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	cium	opm	ASTM D5185m	1070	1133	1180	997
Sulfur ppm ASTM D5185m 2060 3639 3350 335 CONTAMINANTS method limit/base current history1 his Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m 3 <1 <1 Potassium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 his Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	osphorus r	ppm	ASTM D5185m	1150	1060	1082	913
CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m 3 <1 <1 Potassium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 history2 history2 history2 history2 history2 history3 1 3 0.9 0.5 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 6.1 5.1 Sulfation *ASTM D7415 >30 19.5 19.0 18.2	c t	opm	ASTM D5185m	1270	1250	1214	1138
Silicon ppm ASTM D5185m >25 6 7 5 Sodium ppm ASTM D5185m 3 <1	fur p	opm	ASTM D5185m	2060	3639	3350	3359
Sodium ppm ASTM D5185m 3 <1	ONTAMINANT	S	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 6 3 2 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	con r	opm	ASTM D5185m	>25	6	7	5
INFRA-RED method limit/base current history1 history2 0.5 Nitration Abs/cm *ASTM D7844 >3 1.3 0.9 0.5 6.1 6.1 6.1 6.1 6.1 6.1 8.1 9.0 18.2 19.0 18.2 19.0 18.2 19.0 18.2 19.0 18.2 19.0	q muit	opm	ASTM D5185m		3	<1	<1
Soot % % *ASTM D7844 >3 1.3 0.9 0.5 Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	assium p	opm	ASTM D5185m	>20	6	3	2
Nitration Abs/cm *ASTM D7624 >20 6.3 6.1 6.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	NFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.5 19.0 18.2	ot %	%	*ASTM D7844	>3	1.3	0.9	0.5
	ation	Abs/cm	*ASTM D7624	>20	6.3	6.1	6.1
FLUID DEGRADATION method limit/base current history1 his	fation /	Abs/.1mm	*ASTM D7415	>30	19.5	19.0	18.2
	LUID DEGRAD <i>A</i>	NOITA	method	limit/base	current	history1	history2
Oxidation Abs/.1mm *ASTM D7414 >25 12.6 13.2 13.5	dation /	Abs/.1mm	*ASTM D7414	>25	12.6	13.2	13.5
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.6 8.6 8.7	se Number (BN)	ng KOH/g	ASTM D2896	9.8	8.6	8.6	8.7



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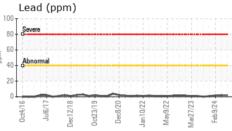


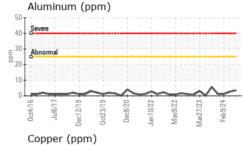
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

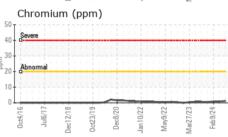
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.8	13.4

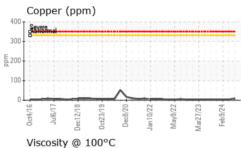
200 - Sev	ere	<u> </u>	111		1111	1111		1 1 1 1
150-				A				
100 - Abr	normal			A				
					7	1		
50-	~			1		1	\checkmark	1
50 0 91/4120		Dec12/18 -	0ct23/19-	Dec8/20	2-1	₹ 2	Mar27/23 - <	Feb9/24

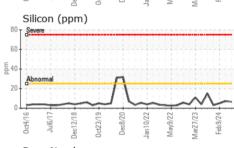
GRAPHS

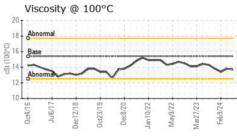


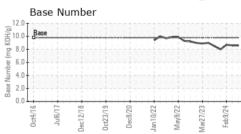
















Lab Number : 06191425

Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : PCA0109104

Received **Tested** Diagnosed

: 24 May 2024 : 29 May 2024 : 29 May 2024 - Wes Davis

9446 N Hwy 309 Ozark, AR US 72949

Certificate 12367

Unique Number : 11048177 Test Package : MOB 1 (Additional Tests: TBN)

Contact: ozark@rivervalleyquarries.com

Kemp Quarries - River Valley - Ozark

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) T:

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