

OIL ANALYSIS REPORT

KEMP QUARRIES / PRYOR STONE [68459] **WP067**

Component **Diesel Engine**

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

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: PM performed. Engine oil sample taken. Engine oil, and all filters changed.)

Wear

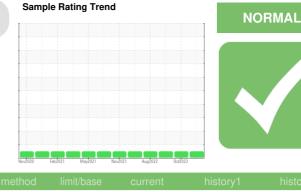
All component wear rates are normal.

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 condition of the oil is suitable for further service.

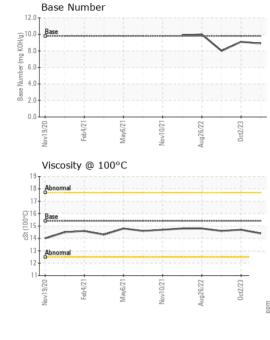




SAMPLE INFORM	MATION	method	limit/base	current	history1	history2		
Sample Number		Client Info		PCA0084398	PCA0086248	PCA0070358		
Sample Date		Client Info		20 Dec 2023	02 Oct 2023	27 Jan 2023		
Machine Age	hrs	Client Info		5052	4728	4389		
Oil Age	hrs	Client Info		324	339	340		
Oil Changed		Client Info		Changed	Changed	Changed		
Sample Status				NORMAL	NORMAL	NORMAL		
CONTAMINAT	ON	method	limit/base	current	history1	history2		
Fuel		WC Method	>5	<1.0	<1.0	<1.0		
Water		WC Method	>0.2	<1.0 NEG	<1.0 NEG	<1.0 NEG		
		WC Method	>0.2	NEG	NEG			
Glycol				NEG		NEG		
WEAR METAL	S	method	limit/base	current	history1	history2		
Iron	ppm	ASTM D5185m	>100	9	18	46		
Chromium	ppm	ASTM D5185m	>20	0	<1	<1		
Nickel	ppm	ASTM D5185m	>4	0	0	0		
Titanium	ppm	ASTM D5185m		0	<1	0		
Silver	ppm	ASTM D5185m	>3	0	0	0		
Aluminum	ppm	ASTM D5185m	>20	<1	1	2		
Lead	ppm	ASTM D5185m	>40	3	3	3		
Copper	ppm	ASTM D5185m	>330	2	<1	<1		
Tin	ppm	ASTM D5185m	>15	<1	<1	<1		
Vanadium	ppm	ASTM D5185m		0	0	0		
Cadmium	ppm	ASTM D5185m		0	0	0		
ADDITIVES		method	limit/base	current	history1	history2		
Boron	ppm	ASTM D5185m	0	1	<1	2		
Boron Barium	ppm ppm		0	1 0	<1 0	2 0		
Barium	ppm	ASTM D5185m	0 60	0	0	0		
Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m	0 60	0 64	0 59	0 63		
Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0	0 64 0	0 59 <1	0 63 <1		
Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010	0 64 0 1059	0 59 <1 964	0 63 <1 957		
Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070	0 64 0 1059 1140	0 59 <1 964 1083	0 63 <1 957 1083		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150	0 64 0 1059 1140 1107	0 59 <1 964 1083 1001	0 63 <1 957 1083 941		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270	0 64 0 1059 1140 1107 1354	0 59 <1 964 1083 1001 1294	0 63 <1 957 1083 941 1184		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060	0 64 0 1059 1140 1107 1354 3352	0 59 <1 964 1083 1001 1294 3064	0 63 <1 957 1083 941 1184 3319		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base	0 64 0 1059 1140 1107 1354 3352 current	0 59 <1 964 1083 1001 1294 3064 history1	0 63 <1 957 1083 941 1184 3319 history2		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 64 0 1059 1140 1107 1354 3352 current 3	0 59 <1 964 1083 1001 1294 3064 <u>history1</u> 4	0 63 <1 957 1083 941 1184 3319 history2 4		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 64 0 1059 1140 1107 1354 3352 current 3 <1	0 59 <1 964 1083 1001 1294 3064 history1 4 1	0 63 <1 957 1083 941 1184 3319 history2 4 3		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 limit/base >25	0 64 0 1059 1140 1107 1354 3352 <u>current</u> 3 <1 0	0 59 <1 964 1083 1001 1294 3064 <u>history1</u> 4 1 2	0 63 <1 957 1083 941 1184 3319 history2 4 3 0		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 60 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3	0 64 0 1059 1140 1107 1354 3352 <u>current</u> 3 <1 0 <u>current</u> 0.1	0 59 <1 964 1083 1001 1294 3064 history1 4 1 2 history1	0 63 <1 957 1083 941 1184 3319 history2 4 3 0 history2		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20	0 64 0 1059 1140 1107 1354 3352 <u>current</u> 3 <1 0	0 59 <1 964 1083 1001 1294 3064 history1 4 1 2 history1 0.4	0 63 <1 957 1083 941 1184 3319 history2 4 3 0 history2 0.2		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 	0 64 0 1059 1140 1107 1354 3352 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.8	0 59 <1 964 1083 1001 1294 3064 <u>history1</u> 4 1 2 <u>history1</u> 0.4 6.3	0 63 <1 957 1083 941 1184 3319 history2 4 3 0 0 history2 0.2 7.1		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 60 1010 1070 1150 1270 2060 imit/base >25 	0 64 0 1059 1140 1107 1354 3352 current 3 <1 0 current 0.1 5.8 18.0 current	0 59 <1 964 1083 1001 1294 3064 history1 4 1 2 history1 0.4 6.3 18.6 history1	0 63 <1 957 1083 941 1184 3319 history2 4 3 0 history2 0.2 7.1 16.6 history2		
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	ASTM D5185m ASTM D5185m	0 60 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >3 >20 >30	0 64 0 1059 1140 1107 1354 3352 <u>current</u> 3 <1 0 <u>current</u> 0.1 5.8 18.0	0 59 <1 964 1083 1001 1294 3064 history1 4 1 2 history1 0.4 6.3 18.6	0 63 <1 957 1083 941 1184 3319 history2 4 3 0 history2 0.2 7.1 16.6		



OIL ANALYSIS REPORT



				VISU	۹L			metho	od l	imit/base		current	ł	nistory1		history2
				White Me	etal		scalar	*Visual	I N	ONE	I	NONE	NC	DNE	N	ONE
		\sim		Yellow N	letal		scalar	*Visual	I NO	ONE		NONE	NC	DNE	N	ONE
				Precipita			scalar	*Visual	I NO	ONE		NONE	NC	DNE	N	ONE
				Silt			scalar	*Visual		ONE		NONE	NC	DNE		ONE
				Debris			scalar	*Visual		ONE		NONE		DNE		ONE
				Sand/Dir	t		scalar	*Visual		ONE		NONE		DNE		ONE
	0/21	ug26/22 - 0ct2/23 -		Appeara			scalar	*Visual		ORML		NORML		DRML		ORML
	Nov10/21	Aug26/22 0ct2/23		Odor			scalar	*Visual		ORML		NORML		DRML		ORML
				Emulsifie	d Wate	r	scalar	*Visual).2		NEG	NE			EG
				Free Wa		.1	scalar	*Visual				NEG	NE			EG
									_	• • • •						
						PE	RTIES	metho		imit/base		current		nistory1 ⊐		history2
-				Visc @ 1			cSt	ASTML	0445 15	0.4		14.4	14	. /	2	l.6
				GRAF												
			250	Iron (p	pm)						L€ 	ead (ppm)				
	21-	22 -	200	Severe		1					1	evere				
	Nov10/21	Aug26/22 0ct2/23									60 -					
	Z	A	E 150	Abnormal		-				L L		bnormal				
			50				\wedge				20					
					-	-				<u> </u>						
					Feb4/21-	May6/21-	Nov10/21-	6/22 -	0ct2/23 -	-		Feb4/21-	May6/21-	0/21-	6/22 -	0ct2/23 -
				Nov19/20	Feb	May	Nov1	Aug26/22	0ct.		Nov19/20	Feb	May	Nov10/21	Aug26/22	Oct
				Alumin	um (pp	m)						hromium (ppm)			
			50 40	Severe							50 40	evere			1	
					1						10					
			³⁰ ط 20	Abnormal						mqq	20	bnormal				
						1					1					
			10			T					10-					
			0	Vov19/20	Feb4/21-	May6/21-	Nov10/21	Aug26/22 -	0ct2/23	-	00/19/20	Feb4/21.	May6/21-	Nov10/21+	Aug26/22 -	0ct2/23 -
				-			Nov	Aug2	00					Nov	Aug2	00
			400	Copper	(ppm))						licon (ppm were	1)			
			300	Severe Abnormal						Ξ.	60					
			튭 200) +						d	40-	bnormal				
			100	•							20-					
			(_	-		~	~					-	-	-
				Nov19/20	Feb4/21	May6/21	Nov10/21	Aug26/22	0ct2/23		Nov19/20	Feb4/21	May6/21	Nov10/21	Aug26/22	0ct2/23
				∕iscosi				Aug	0			ase Numb		No	Auç	0
		20	T	.,		• 			12	2.0						
			18	Abnormal						- 9	0.0 - E 3.0 -	ase				-
			(D-001) tsp	Base		-				er (mg	5.0					
				Abnormal						f quint 4	1.0 -					
			12							Base 2	2.0					
			10		Feb4/21+	May6/21+	0/21	6/22	0ct2/23 -	0		Feb4/21-	May6/21+	0/21-	6/22	0ct2/23 -
				Nov19/20	Feb	May	Nov10/2	Aug26/22	Oct.		Nov19/20	Feb	May	Nov10/21	Aug26/22	Oct
	AB BOOMATORY te L2367	Laboratory Sample No Lab Numb Unique Num Test Packa	b. : er : nber : age :	: PCA0084398 F r : 06049343 C er : 10809951 C			Recieved Diagnose Diagnost Tests: TE	biagnosed : 04 Jan 2024 biagnostician : Jonathan Hester fests: TBN)				Kemp Quarries - Pryor Stone - Pryor 1050 E 520 F Pryor, C US 7436 Contact: PRYOR NOTIFICATION pryor@pryorstone.co				
Der	notes te	s sample rep st methods th conformity to s	nat are	outside d	of the IS	SO 1	7025 sco	pe of ac	creditat		(JCC	GM 106:20	12)	pryor(⊉pryors	tone.co ٦ F