

### **OIL ANALYSIS REPORT**

### Sample Rating Trend

### **NORMAL**







# KEMP QUARRIES / BCS - GRAVETTE [67847] **WL134**

Component **Diesel Engine** 

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

### DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor. ( Customer Sample Comment: Pm-1)

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

#### **Fluid Condition**

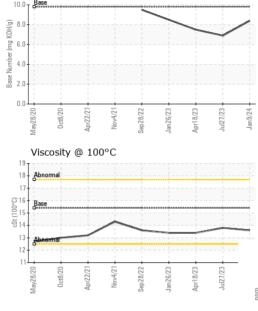
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   limit/base   current   history1   history2	N SHP 15W40 (	- GAL)	May2020 Oc	2020 Apr2021 Nov2021	Sep2022 Jan2023 Apr2023 Jul202	23 Jan 2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         26117         26117         25666           Oil Age         hrs         Client Info         26117         26117         25666           Oil Changed         Client Info         Changed         Changed <td>Sample Number</td> <td></td> <td>Client Info</td> <td></td> <th>PCA0069812</th> <td>PCA0084531</td> <td>PCA0086060</td>	Sample Number		Client Info		PCA0069812	PCA0084531	PCA0086060
Machine Age         hrs         Client Info         26117         26117         25666           Oil Age         hrs         Client Info         26117         26117         25666           Oil Changed         Client Info         Changed Cha			Client Info		09 Jan 2024	27 Jul 2023	18 Apr 2023
Oil Changed Sample Status         Client Info         Changed NORMAL         Changed NeG NEG NEG NEG NEG NoB         Changed NEG NEG NEG NoB         Change NEG NoB         Changed NEG NEG NoB         Changed NEG NoB         Changed NEG NoB         Change NEG NoB         Change NEG NoB         Change NEG NoB         Change NEG NoB <t< td=""><td>Machine Age</td><td>hrs</td><td>Client Info</td><td></td><th>26117</th><td>26117</td><td></td></t<>	Machine Age	hrs	Client Info		26117	26117	
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   militibase   current   history1   history2	Oil Age	hrs	Client Info		26117	26117	25666
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   militibase   current   history1   history2	-		Client Info		Changed	Changed	Changed
Fuel					_		
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >20         <1         <1         <1           Silver         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         0           Copper         ppm         ASTM D5185m         >40         3         3         8         5           Tin         ppm         ASTM D5185m         >15         <1         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	26	38	34
Titanium         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         1         2         <1           Lead         ppm         ASTM D5185m         >40         3         3         0           Copper         ppm         ASTM D5185m         >40         3         3         0           Copper         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         >15         <1         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         1         2         <1           Lead         ppm         ASTM D5185m         >40         3         3         0           Copper         ppm         ASTM D5185m         >330         3         8         5           Tin         ppm         ASTM D5185m         >15         <1         <1         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         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         <1         <1           Mangnesium         ppm         ASTM D5185m         1010         980         918         <	Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Aluminum         ppm         ASTM D5185m         >25         1         2            Lead         ppm         ASTM D5185m         >40         3         3         0           Copper         ppm         ASTM D5185m         >330         3         8         5           Tin         ppm         ASTM D5185m         >15         <1	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead         ppm         ASTM D5185m         >40         3         3         0           Copper         ppm         ASTM D5185m         >330         3         8         5           Tin         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         <1         <1         <1           Boron         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         980         918         959	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper         ppm         ASTM D5185m         >330         3         8         5           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>25	1	2	<1
Tin         ppm         ASTM D5185m         >15         <1         <1         0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         980         918         959           Calcium         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         >26	Lead	ppm	ASTM D5185m	>40	3	3	0
Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         7         0           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         980         918         959           Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base	Copper	ppm	ASTM D5185m	>330	3	8	5
Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	<1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron   ppm   ASTM D5185m   0   c1   7   0   0	Cadmium	ppm	ASTM D5185m		<1	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         50         54         60           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         980         918         959           Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1         1         0           INFRA-RED         method	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         50         54         60           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         980         918         959           Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1         1         <1         <1           Potassium         ppm         ASTM D5185m         >20         <1         1         0           INFRA-RED         method         <	Boron	ppm	ASTM D5185m	0	<1	7	0
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         980         918         959           Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         980         918         959           Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m	60		54	60
Calcium         ppm         ASTM D5185m         1070         995         1147         1087           Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         969         1024         960           Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	980	918	959
Zinc         ppm         ASTM D5185m         1270         1154         1274         1241           Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	995	1147	1087
Sulfur         ppm         ASTM D5185m         2060         2816         3563         3229           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1150	969	1024	960
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         <1	Zinc	ppm	ASTM D5185m	1270	1154	1274	1241
Silicon         ppm         ASTM D5185m         >25         3         5         3           Sodium         ppm         ASTM D5185m         <1         1         <1           Potassium         ppm         ASTM D5185m         >20         <1         1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.3         1.9         1.4           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.2	Sulfur	ppm	ASTM D5185m	2060	2816	3563	3229
Sodium         ppm         ASTM D5185m         <1         1         <1           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1	Silicon	ppm	ASTM D5185m	>25	3	5	3
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         1.3         1.9         1.4           Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.2	Sodium	ppm	ASTM D5185m		<1	1	<1
Soot %         %         *ASTM D7844 >3         1.3         1.9         1.4           Nitration         Abs/cm         *ASTM D7624 >20         7.4         8.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.5         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.8         13.9         13.2	Potassium	ppm	ASTM D5185m	>20	<1	1	0
Nitration         Abs/cm         *ASTM D7624         >20         7.4         8.3         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.5         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.2	Soot %	%	*ASTM D7844	>3	1.3	1.9	1.4
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.8     13.9     13.2	Nitration	Abs/cm	*ASTM D7624	>20	7.4	8.3	7.2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.8</b> 13.9 13.2	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.5	20.6	18.3
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 8.4 6.9 7.5	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	13.9	13.2
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.4	6.9	7.5



Base Number

## **OIL ANALYSIS REPORT**



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
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID DDODE	DTIEO		11 11 11		111	1

LLUID FROFI		memod			HISTOLAL	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.8	13.4

Iron (ppm)	Lead (ppm)
250 - Severe	100 80 Severe
150 Abnormal	40 Abnormal
May28/20 + Oct8/20 + Apr22/21 + Sep28/22 + Jan26/23 + Apr18/23 - Jul27/23 + Apr18/23 + A	Jan9/24 - Jan9/24 - Jan9/24 - Apri2/2/21 - Sep 28/22 - Jan26/23 - Jan26/23 - Jan26/23 - Jan9/24
Aluminum (ppm)	Chromium (ppm)
40 - Severe	40 Severe
Abnormal 20	20 Abnormal
May28/20 — Oct8/20 — Apr22/21 — Apr22/21 — Jan26/23 — Jan26/23 — Jul27/23 — Jul27/23	Jan 9/24 - Jan 9/24 - Jan 9/24 - Jan 9/24 - Jan 26/27 - Jan 26/23 - Jan 26/24
Copper (ppm)	Silicon (ppm)
300 -	80 Severe
E 200	E 40
100	Abnormal 20
May28/20 Oct8/20 Nov4/21 Sep28/22 Jan26/23 Jul27/23	Jan 9/24  Jan 9/24  Apr 22/21  Nov 4/21  Sep 28/22  Jan 26/23  Jul 27/23
Viscosity @ 100°C	Base Number
18 Abnormal	
10 Base Base Ahnormal	<u></u> <u> </u>
8 14 Abnormal	8.0 (m) ROM (M) (M) RO
	To an analysis of the second s





Laboratory Sample No.

Lab Number

Unique Number : 10858438

: PCA0069812 : 06076347 Test Package : MOB 1 (Additional Tests: TBN)

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

: 31 Jan 2024 : 02 Feb 2024 Diagnostician : Don Baldridge

Kemp Quarries - Benton County Stone - Gravette 15100 N Hwy 59 Sulphur Springs, AR

US 72768 Contact:

To discuss this sample report, contact Customer Service at 1-800-237-1369. gravette@bentoncountystone.com \* - 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:

F: