

## **OIL ANALYSIS REPORT**

Sample Rating Trend





## Area BD SHOP 200301 Component Diesel Engine

PETRO CANADA DURON SHP 10W30 (--- GAL)

### DIAGNOSIS

### 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

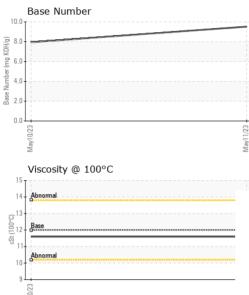
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

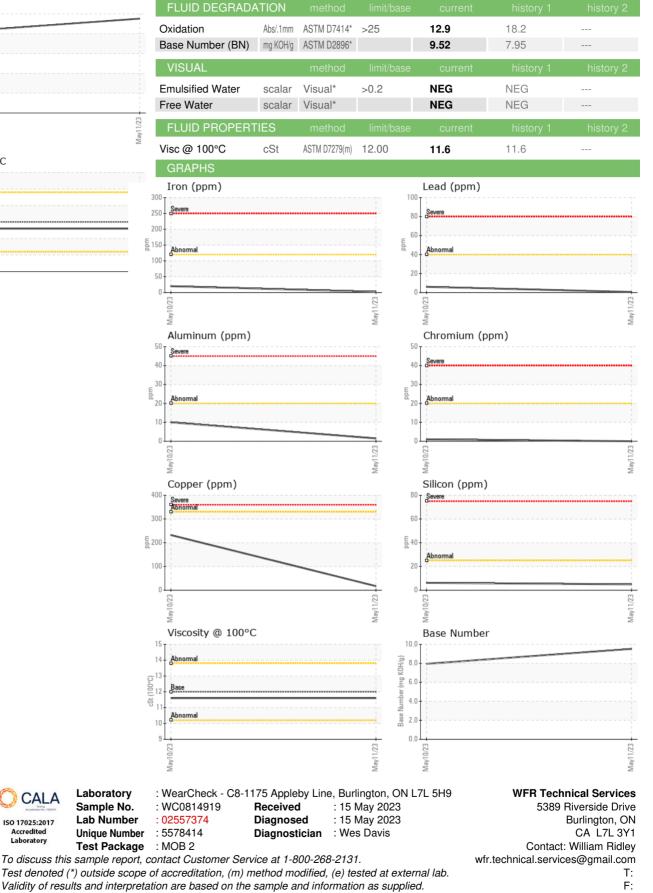
SAMPLE INFORMATION  method  limit/base  current  history 1  history 2    Sample Date  Client Info  WC0814919  WC0814930     Machine Age  Kms  Client Info  11 May 2023  10 May 2023     Oil Age  Kms  Client Info  0  55542     Oil Changed  Client Info  0  55542     Sample Status  Imit/base  current  history 1  history 2    Fuel  WC Method  >5  <1.0  <1.0     Glycol  WC Method  >5  <1.0  <1.0     WEAR METALS  method  Imit/base  current  history 1  history 2    from<  ppm  ASTM0586m  >120  2  20     Mickel  ppm  ASTM0586m  >20  <1     Mickel  ppm  ASTM0586m  >20  <1     Aluminum  ppm  ASTM0586m  >300				May2023	maroro		
Sample Date  Client Info  11 May 2023  10 May 2023     Machine Age  kms  Client Info  119748  119747     Oil Age  Kms  Client Info  0  55542     Oil Changed  Client Info  Changed  Not Changed     Sample Status  Imit/base  current  history 1  history 2    Fuel  WC Method  >5  <1.0      WEAR METALS  method  imit/base  current  history 1  history 2    Iron  ppm  ASTM 05185(m)  >20  0  1     Nickel  ppm  ASTM 05185(m)  >20  0  <1     Aluminum  ppm  ASTM 05185(m)  >20  <1      Aluminum  ppm  ASTM 05185(m)  >20  <1      Aluminum  ppm  ASTM 05185(m)  20  <1      Aluminum	SAMPLE INFORM	1ATION	method	limit/base	current	history 1	history 2
Machine Age  kms  Client Info  119748  119747     Oil Age  kms  Client Info  0  55542     Oil Changed  Client Info  0  55542     Sample Status  Imit/base  Current  NoRMAL     GONTAMINATION  method  Somple Status   NorAMAL     Glycol  WC Method  >5  <1.0  <1.0     Glycol  WC Method  >5  <1.0  <     WEAR METALS  method  Imit/base  current  history 1  history 2    Iron  ppm  ASTM05185/m  >20  0  <     Nickel  ppm  ASTM05185/m  >20  <      Aluminum  ppm  ASTM05185/m  >20  <      Aluminum  ppm  ASTM05185/m  >0  1      Aluminum  ppm  ASTM0	Sample Number		Client Info		WC0814919	WC0814930	
Oil Age  Kms  Client Info  0  55542     Sample Status  Client Info  Changed  No Changd     Sample Status  method  Imit/base  current  No Changd     CONTAMINATION  method  Imit/base  current  No Changd     Glycol  WC Method  >5  <1.0  <     Glycol  WC Method  >5  <1.0  <     MEAR METALS  method  Imit/base  current  history 1  history 2    Iron  ppm  ASTM D5185(m)  >20  0  1     Nickel  ppm  ASTM D5185(m)  >20  0  <1     Aluminum  ppm  ASTM D5185(m)  >20  0  <1     Aluminum  ppm  ASTM D5185(m)  >20  2  10     Aluminum  ppm  ASTM D5185(m)  >20  1	Sample Date		Client Info		11 May 2023	10 May 2023	
Oil Changed Sample Status  Client Info  Changed NORMAL  Not Changed NORMAL  Not Changed CONTAMINATION  method  imit/base  current  history 1  history 2    Fuel  WC Method  >5  <1.0  <1.0     Glycol  WC Method  >5  <1.0  <1.0     WEAR METALS  method  limit/base  current  history 1  history 2    Iron  ppm  ASTM 05165(m)  >20  0  1     Nickel  ppm  ASTM 05165(m)  >20  0  <1     Nickel  ppm  ASTM 05165(m)  >2  0  <1     Silver  ppm  ASTM 05165(m)  >20  2  10     Lead  ppm  ASTM 05165(m)  >330  17  232     Antimony  ppm  ASTM 05165(m)  0  0      Antimony  ppm  ASTM 05165(m)  0  0	Machine Age	kms	Client Info		119748	119747	
Sample Status  NORMAL  NORMAL  NORMAL	Oil Age	kms	Client Info		0	55542	
CONTAMINATION  method  limit/base  current  history 1  history 2    Fuel  WC Method  >5  <1.0  <1.0     Glycol  WC Method  >5  <1.0  <1.0     WEAR METALS  method  limit/base  current  history 1  history 2    Iron  ppm  ASTM D5185(m)  >20  0  1     Nickel  ppm  ASTM D5185(m)  >2  0  <1     Aluminum  ppm  ASTM D5185(m)  >2  0  <1     Lead  ppm  ASTM D5185(m)  >2  0  <1     Lead  ppm  ASTM D5185(m)  >30  17  232     Tin  ppm  ASTM D5185(m)  1       Antimony  ppm  ASTM D5185(m)  0  0  0     Astm D5185(m)  pm  ASTM D5185(m)  0  0	Oil Changed		Client Info		Changed	Not Changd	
Fuel  WC Method  >5  <1.0	Sample Status				NORMAL	NORMAL	
Glycol  WC Method  NEG  NEG     WEAR METALS  method  limit/base  current  history 1  history 2    Iron  ppm  ASTMD5185(m)  >120  2  20     Nickel  ppm  ASTMD5185(m)  >20  0  1     Nickel  ppm  ASTMD5185(m)  >2  0  <1     Silver  ppm  ASTMD5185(m)  >2  0  <1     Lead  ppm  ASTMD5185(m)  >2  0  <1     Antimoum  ppm  ASTMD5185(m)  >20  2  10     Lead  ppm  ASTMD5185(m)  >15  0  1     Antimony  ppm  ASTMD5185(m)  0  0  0     Vanadium  ppm  ASTMD5185(m)  0  0      Boron  ppm  ASTMD5185(m)  0  0  0	CONTAMINATION	١	method	limit/base	current	history 1	history 2
WEAR METALS  method  limit/base  current  history 1  history 2    Iron  ppm  ASTM D5165(m)  >120  2  20     Nickel  ppm  ASTM D5165(m)  >20  0  1     Nickel  ppm  ASTM D5165(m)  >2  0  <1     Titanium  ppm  ASTM D5165(m)  >2  0  <1     Aluminum  ppm  ASTM D5165(m)  >2  0  <1     Lead  ppm  ASTM D5165(m)  >20  2  10     Copper  ppm  ASTM D5165(m)  >20  2  10     Lead  ppm  ASTM D5165(m)  >20  1  6     Vanadium  ppm  ASTM D5165(m)  >15  0  1     Vanadium  ppm  ASTM D5165(m)  0  0  0     Cadmium  ppm  ASTM D5165(m)  0	Fuel		WC Method	>5	<1.0	<1.0	
Iron  ppm  ASTM D5185(m)  >12.0  2  20     Chromium  ppm  ASTM D5185(m)  >2  0  1     Nickel  ppm  ASTM D5185(m)  >2  0  <1     Titanium  ppm  ASTM D5185(m)  >2  0  <1     Silver  ppm  ASTM D5185(m)  >2  0  <1     Aluminum  ppm  ASTM D5185(m)  >2  0  <1  6     Copper  ppm  ASTM D5185(m)  >20  2  10     Antimony  ppm  ASTM D5185(m)  >330  17  232     Antimony  ppm  ASTM D5185(m)  0  0      Vanadium  ppm  ASTM D5185(m)  0  0      Cadmium  ppm  ASTM D5185(m)  0  0      Boron  ppm	Glycol		WC Method		NEG	NEG	
Chromium  ppm  ASTM D5186(m)  >20  0  1     Nickel  ppm  ASTM D5186(m)  >5  <1  7     Titanium  ppm  ASTM D5186(m)  >2  0  <1     Silver  ppm  ASTM D5186(m)  >2  0  <1     Aluminum  ppm  ASTM D5186(m)  >2  0  <1     Lead  ppm  ASTM D5186(m)  >330  17  232     Copper  ppm  ASTM D5186(m)  >330  17  232     Antimony  ppm  ASTM D5186(m)  0  0     Vanadium  ppm  ASTM D5186(m)  0  0     Cadmium  ppm  ASTM D5186(m)  0  0     Boron  ppm  ASTM D5186(m)  2  8  7     Maganese  ppm  ASTM D5186(m)  5  60	WEAR METALS		method	limit/base	current	history 1	history 2
Chromium  ppm  ASTM D5185(m)  >20  0  1     Nickel  ppm  ASTM D5185(m)  >5  <1  7     Titanium  ppm  ASTM D5185(m)  >2  0  <1     Silver  ppm  ASTM D5185(m)  >2  0  <1     Aluminum  ppm  ASTM D5185(m)  >2  0  <1     Aluminum  ppm  ASTM D5185(m)  >20  2  10     Lead  ppm  ASTM D5185(m)  >330  17  232     Copper  ppm  ASTM D5185(m)  >330  17  232     Yanadium  ppm  ASTM D5185(m)  0  0      Vanadium  ppm  ASTM D5185(m)  0  0  0     Cadmium  ppm  ASTM D5185(m)  0  0      Boron  ppm  ASTM D5185(m)	Iron	ppm	ASTM D5185(m)	>120	2	20	
Titanium  ppm  ASTM D5185(m)  >2  0  <1	Chromium		ASTM D5185(m)	>20	0	1	
Silver  ppm  ASTM D5185(m)  >2  0  <1	Nickel	ppm	ASTM D5185(m)	>5	<1	7	
Silver  ppm  ASTM D5185(m)  >2  0  <1	Titanium			>2	0	<1	
Aluminum  ppm  ASTM D5185(m)  >20  2  10     Lead  ppm  ASTM D5185(m)  >40  <1  6     Copper  ppm  ASTM D5185(m)  >330  17  232     Tin  ppm  ASTM D5185(m)  >15  0  1     Antimony  ppm  ASTM D5185(m)  0  0  0     Vanadium  ppm  ASTM D5185(m)  0  0  0     Beryllium  ppm  ASTM D5185(m)  0  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  0  0  0     Maganese  ppm  ASTM D5185(m)  0  58  60     Magnesium  ppm  ASTM D5185(m)  1050  1092  1255     Calcium  ppm  ASTM D5185(m)	Silver		ASTM D5185(m)	>2	0	<1	
Copper  ppm  ASTM D5185(m)  >330  17  232     Tin  ppm  ASTM D5185(m)  >15  0  1     Antimony  ppm  ASTM D5185(m)  <1      Vanadium  ppm  ASTM D5185(m)  0  0     Beryllium  ppm  ASTM D5185(m)  0  0     Cadmium  ppm  ASTM D5185(m)  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0     Manganese  ppm  ASTM D5185(m)  0  1  1     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  950  1060  940	Aluminum	ppm	ASTM D5185(m)	>20	2	10	
Tin  ppm  ASTM D5186(m)  >15  0  1     Antimony  ppm  ASTM D5185(m)  0  0  0     Vanadium  ppm  ASTM D5185(m)  0  0  0     Beryllium  ppm  ASTM D5185(m)  0  0  0     Cadmium  ppm  ASTM D5185(m)  0  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  0  0  0  0     Molybdenum  ppm  ASTM D5185(m)  0  58  60     Manganese  ppm  ASTM D5185(m)  0  <11	Lead	ppm	ASTM D5185(m)	>40	<1	6	
Antimony  ppm  ASTM D5185(m)  <1	Copper		ASTM D5185(m)	>330	17	232	
Vanadium  ppm  ASTM D5185(m)  0  0     Beryllium  ppm  ASTM D5185(m)  0  0     Cadmium  ppm  ASTM D5185(m)  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0     Magnaese  ppm  ASTM D5185(m)  50  58  60     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  950  929  896     Sulfur  ppm  ASTM D5185(m)  2600  2697  215	Tin	ppm	ASTM D5185(m)	>15	0	1	
Beryllium  ppm  ASTM D5185(m)  0  0     Cadmium  ppm  ASTM D5185(m)  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0  0     Barium  ppm  ASTM D5185(m)  0  58  60     Manganese  ppm  ASTM D5185(m)  0  <1	Antimony	ppm	ASTM D5185(m)		<1	<1	
Cadmium  ppm  ASTM D5185(m)  0  0     ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0  0     Barium  ppm  ASTM D5185(m)  0  0  0  0     Barium  ppm  ASTM D5185(m)  0  0  0  0     Manganese  ppm  ASTM D5185(m)  0  <11	Vanadium	ppm	ASTM D5185(m)		0	0	
ADDITIVES  method  limit/base  current  history 1  history 2    Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0     Malybdenum  ppm  ASTM D5185(m)  50  58  60     Manganese  ppm  ASTM D5185(m)  0  <1  1     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Phosphorus  ppm  ASTM D5185(m)  1950  1060  940     Zinc  ppm  ASTM D5185(m)  2600  2697  2156     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(	Beryllium	ppm	ASTM D5185(m)		0	0	
Boron  ppm  ASTM D5185(m)  2  8  7     Barium  ppm  ASTM D5185(m)  0  0  0     Molybdenum  ppm  ASTM D5185(m)  50  58  60     Manganese  ppm  ASTM D5185(m)  0  <1  1     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Phosphorus  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  2600  2697  2156     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  3     Potassium  ppm	Cadmium	ppm	ASTM D5185(m)		0	0	
Barium  ppm  ASTM D5185(m)  0  0  0  0     Molybdenum  ppm  ASTM D5185(m)  50  58  60     Manganese  ppm  ASTM D5185(m)  0  <1  1     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Phosphorus  ppm  ASTM D5185(m)  1050  1092  1255     Zinc  ppm  ASTM D5185(m)  995  1060  940     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600  2697  2156     Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history 1</th> <th>history 2</th>	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum  ppm  ASTM D5185(m)  50  58  60     Manganese  ppm  ASTM D5185(m)  0  <1  1     Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Calcium  ppm  ASTM D5185(m)  905  1060  940     Zinc  ppm  ASTM D5185(m)  915  1060  940     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600  2697  2156     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method </th <th>Boron</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th>2</th> <th>8</th> <th>7</th> <th></th>	Boron	ppm	ASTM D5185(m)	2	8	7	
Manganese  ppm  ASTM D5185(m)  0  <1	Barium	ppm	ASTM D5185(m)	0	0	0	
Magnesium  ppm  ASTM D5185(m)  950  929  896     Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Phosphorus  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  960  2697  2156     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600  2697  2156     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  3     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %	Molybdenum	ppm	ASTM D5185(m)	50	58	60	
Calcium  ppm  ASTM D5185(m)  1050  1092  1255     Phosphorus  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  1180  1154  1093     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600  2697  2156     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  3     Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %	Manganese	ppm	ASTM D5185(m)	0	<1	1	
Phosphorus  ppm  ASTM D5185(m)  995  1060  940     Zinc  ppm  ASTM D5185(m)  1180  1154  1093     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600  2697  2156     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >25  5  6     Potassium  ppm  ASTM D5185(m)  >20  1  3     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Magnesium	ppm	ASTM D5185(m)	950	929	896	
Zinc  ppm  ASTM D5185(m)  1180  1154  1093     Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600   <1  <1     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >25  5  6     Potassium  ppm  ASTM D5185(m)  >20  1  3     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Calcium	ppm	ASTM D5185(m)	1050	1092	1255	
Sulfur  ppm  ASTM D5185(m)  2600  2697  2156     Lithium  ppm  ASTM D5185(m)  2600   <1  <1     CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  3     Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Phosphorus	ppm	ASTM D5185(m)	995	1060	940	
Lithium  ppm  ASTM D5185(m)  <1	Zinc	ppm	ASTM D5185(m)	1180	1154	1093	
CONTAMINANTS  method  limit/base  current  history 1  history 2    Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  >20  1  3     Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Sulfur	ppm	ASTM D5185(m)	2600	2697	2156	
Silicon  ppm  ASTM D5185(m)  >25  5  6     Sodium  ppm  ASTM D5185(m)  1  3     Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Lithium	ppm	ASTM D5185(m)		<1	<1	
Sodium  ppm  ASTM D5185(m)  1  3     Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	CONTAMINANTS		method	limit/base	current	history 1	history 2
Potassium  ppm  ASTM D5185(m)  >20  1  23     INFRA-RED  method  limit/base  current  history 1  history 2    Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Silicon	ppm	ASTM D5185(m)	>25	5	6	
INFRA-REDmethodlimit/basecurrenthistory 1history 2Soot %%ASTM D7844*>400.3NitrationAbs/cmASTM D7624*>204.69.8	Sodium	ppm	ASTM D5185(m)		1	3	
Soot %  %  ASTM D7844*  >4  0  0.3     Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	Potassium	ppm	ASTM D5185(m)	>20	1	23	
Nitration  Abs/cm  ASTM D7624*  >20  4.6  9.8	INFRA-RED		method	limit/base	current	history 1	history 2
	Soot %	%	ASTM D7844*	>4	0	0.3	
Sulfation  Abs/.1mm  ASTM D7415*  >30  18.0  21.7	Nitration	Abs/cm	ASTM D7624*	>20	4.6	9.8	
	Sulfation	Abs/.1mm	ASTM D7415*	>30	18.0	21.7	



Mav1

# **OIL ANALYSIS REPORT**





CALA

ISO 17025:2017 Accredited

Laboratory