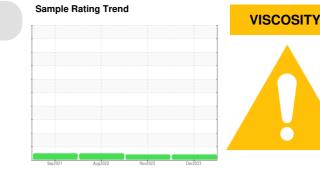


OIL ANALYSIS REPORT





G.LOPES CONSTRUCTION INC./Off-Road **E568** Component

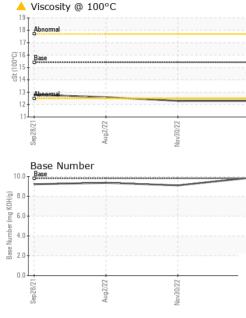
Diesel Engine

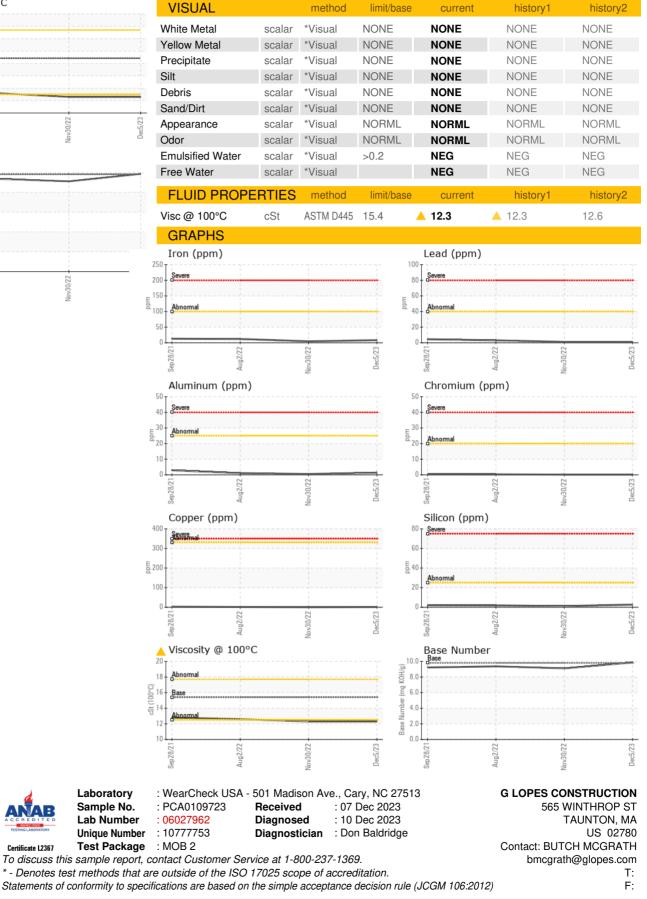
PETRO CANADA DURON SHP 15W40 (--- GAL)

| seamely alt he next service interval to monitor. Far is comporent war rates are normal. Ontaniation normalization of any contamination in the N. Fuid Caliban if if is is all back alkaling romaniants is out social askaling romaniants is out social askalin | DIAGNOSIS | SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
|--|--|---------------|----------|-------------|------------|-------------|-------------|-------------|
| Part Isomonetase are omain ombainiation or isolication of any containingtion is to indication is indication is to indication is indication is to indication is indication is to indication is | Recommendation | Sample Number | | Client Info | | PCA0109723 | PCA0083315 | PCA0071923 |
| Diago http: Client Indo 11644 1157 1157 ordamination nerge in onidication of any contamination in the interies in onidication of any contamination in the interies unable alkalinity remaining in a oil. Confirm oil type. Client Info NA NA NA NA Fulci Condition ne oil viscosity is lower than normal. The BH results alkalinity remaining in a oil. Confirm oil type. Intel Water WCM Method S.S. 4.10 0.4 <10 | Resample at the next service interval to monitor. | Sample Date | | Client Info | | 05 Dec 2023 | 30 Nov 2022 | 02 Aug 2022 |
| Olichanged Client Ind NA NA NA The is number of any contamination in th. Fuel and indication of any contamination in th. Instance Instance Nation | Wear | Machine Age | hrs | Client Info | | 11854 | 11567 | 11567 |
| Control Sample Status ATTENTION ATTENTION NORMAL L Fuel Condition Imbediates that there is suitable alkalinity remaining in the oil viscosity is fower than normal. The BN result dealers that there is suitable alkalinity remaining in the oil viscosity is fower than normal. The BN result dealers that there is suitable alkalinity remaining in the oil viscosity is fower than normal. The BN result dealers that there is suitable alkalinity remaining in the oil viscosity is fower than normal. The BN result dealers that there is suitable alkalinity remaining in the oil viscosity is fower than normal. The BN result dealers that there is an indicate that there is a | All component wear rates are normal. | Oil Age | hrs | Client Info | | 11854 | 11567 | 11567 |
| Ame is no indication of any contamination in the indication of any contamination in the indication of any contamination in the indication at here is suitable alkalinity remaining indicates in a suitable alkalinity remaining | Contamination | Oil Changed | | Client Info | | N/A | N/A | N/A |
| Fuild Condition Fuel Wold Mithod Memboa Immbbas Current Instory1 Instory2 Fuel WO Method >0.2 NEG NEG NEG dicates that there is suitable alkalinity remaining in e oil. Confirm oil type. WO Method >0.2 NEG NEG NEG Verant WO Method >0.2 NEG NEG NEG Verant WO Method >0.0 8 5 12 Torn ppm ASTM DISISm >20 <1 | There is no indication of any contamination in the | Sample Status | | | | ATTENTION | ATTENTION | NORMAL |
| he oil viscosity is lower than normal. The BN result dicates that there is suitable akkainity remaining in e oil. Confirm oil type. VECAR METALS Water WC Method >0.2 NEG NEG NEG WEAR METALS in on ppm ASTM D588m >0.0 8 5 1 2 Iron ppm ASTM D588m >20 4 - - 1 - 1 - 1 - 1 - 1 - 1 - 1 - - 1 - 1 - 1 - <td< td=""><td></td><td>CONTAMINATI</td><td>ION</td><td>method</td><td>limit/base</td><td>current</td><td>history1</td><td>history2</td></td<> | | CONTAMINATI | ION | method | limit/base | current | history1 | history2 |
| dicates that there is suitable akalinity remaining in e oil. Contirm oil type. Weater Weater Giyoo' Weater Weate | | Fuel | | WC Method | >5 | <1.0 | 0.4 | <1.0 |
| e oil. Confirm oil type. Glycol WC Method Imitbase current NEG NEG NEG Iron ppm ASTM 05186m >20 61 61 61 Nickel ppm ASTM 05186m >20 61 61 61 Nickel ppm ASTM 05186m >2 61 61 61 Nickel ppm ASTM 05186m >2 61 61 61 Silver ppm ASTM 05186m >2 1 61 61 Qopper ppm ASTM 05186m >300 1 61 61 Cadmium ppm ASTM 05186m >40 61 61 61 Analizon ppm ASTM 05186m 0 0 0 61 Analizon ppm ASTM 05186m 0 0 0 0 61 Analizon ppm ASTM 05186m 0 62 64 65 64 65 Manadum ppm ASTM 05186m 100 109 116 121 121 </td <td></td> <td>Water</td> <td></td> <td>WC Method</td> <td>>0.2</td> <td>NEG</td> <td>NEG</td> <td>NEG</td> | | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Iron ppm ASTM 2518m >100 8 5 12 Chromium ppm ASTM 2518m >20 <1 | | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >20 <1 <1 <1 Nickel ppm ASTM 0518m >22 0 0 0 Titanium ppm ASTM 0518m >22 0 0 0 Aluminum ppm ASTM 0518m >2 0 0 0 Aluminum ppm ASTM 0518m >2 0 0 0 Copper ppm ASTM 0518m >330 1 <1 | | WEAR METAL | S | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >2 0 0 0 Tranuium ppm ASTM D5185m >2 1 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 1 1 1 Lead ppm ASTM D5185m >300 1 1 1 Copper ppm ASTM D5185m >300 1 1 1 Tin ppm ASTM D5185m >15 0 0 0 0 Vanaduum ppm ASTM D5185m 1 0 0 0 0 ADDITIVES rethod Imit/base current history1 history2 history2 Boron ppm ASTM D5185m 0 62 64 65 Manganese ppm ASTM D5185m 10 96 110 9108 1027 Sulfur ppm AST | | Iron | ppm | ASTM D5185m | >100 | 8 | 5 | 12 |
| Titanium ppm ASTM D5185m >2 <1 0 <1 Silver ppm ASTM D5185m >25 1 -1 1 Lead ppm ASTM D5185m >40 <1 | | Chromium | ppm | ASTM D5185m | >20 | <1 | <1 | <1 |
| Silver ppm ASTM D518m >2 0 0 0 Aluminum ppm ASTM D518m >25 1 <1 1 Copper ppm ASTM D518m >200 1 <1 1 Copper ppm ASTM D518m >330 1 <1 1 Tin ppm ASTM D518m >15 0 0 0 0 Vanadium ppm ASTM D518m 0 0 0 0 0 Cadmium ppm ASTM D518m 0 0 0 0 0 ADDITIVES method init/base current initory1 initory2 Barium ppm ASTM D518m 0 7 0 0 0 Molybdenum ppm ASTM D518m 0 6 2 64 65 Magnesse ppm ASTM D518m 0 6 2 64 65 Molybdenum ppm ASTM D518m 0 6 2 61 1010 1010 1010 | | Nickel | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum ppm ASTM D5186m >25 1 <1 1 Lead ppm ASTM D5186m >40 <1 | | Titanium | ppm | ASTM D5185m | >2 | <1 | 0 | <1 |
| LeadppmASTM D516s>-40-13CopperPimASTM D516s>-3301-1-1TinppmASTM D516s>-100AntimonyppmASTM D516s-0000VanadiumppmASTM D518s-0000CadmiumppmASTM D518s000000ADDITVESmth dsimit/basecurrenthistory1history2BoronppmASTM D518s07000MolybdenumppmASTM D518s0626465ManganeseppmASTM D518s011092976976MangensumppmASTM D518s1105109611701215PhosphorusppmASTM D518s1270132410331270SilforppmASTM D518s1270132413031275SilforppmASTM D518s260312SodiumppmASTM D518s260312PotassiumppmASTM D518s20100INFFRA-REDmth D518s201001NotistianASTM D518s2330.60.30.4INFERA-REDmth D518s231001INFERA-REDmth D518s230.60.3< | | Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >330 1 <1 1 Tin ppm ASTM D5185m >15 0 0 <1 | | Aluminum | ppm | ASTM D5185m | >25 | 1 | <1 | 1 |
| TinppmASTM D5185m>1500<1AntimonyppmASTM D5185mVanadiumppmASTM D5185m0000CadmiumppmASTM D5185m0000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m07015BariumppmASTM D5185m0626465ManganeseppmASTM D5185m0626461MagnesiumppmASTM D5185m1010992976947CalciumppmASTM D5185m1010992976947CalciumppmASTM D5185m1070109611701215PhosphorusppmASTM D5185m1070109611701215SuffurppmASTM D5185m1270132413031275SuffurppmASTM D5185m260327538483702SofdiumppmASTM D5185m220100IticorppmASTM D5185m20110101215SofdiumppmASTM D5185m20312SofdiumppmASTM D5185m20100IticorippmASTM D5185m20100IticorippmASTM D5185m2010.6< | | Lead | ppm | ASTM D5185m | >40 | <1 | 1 | 3 |
| AntimonyppmASTM D5185mVanadiumppmASTM D5185m0000CadmiumppmASTM D5185m00000ADDITIVESmethodlimit/basecurrentHistory1History2BoronppmASTM D5185m07000BariumppmASTM D5185m0626465ManganeseppmASTM D5185m061<1 | | Copper | ppm | ASTM D5185m | >330 | 1 | <1 | 1 |
| Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m Imit/base current history1 history2 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 0 15 Barium ppm ASTM D5185m 0 60 62 64 65 Manganese ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1070 1096 11170 1215 Phosphorus ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 260 3 1 2 Sodium ppm ASTM D5185m <td></td> <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>15</td> <td>0</td> <td>0</td> <td><1</td> | | Tin | ppm | ASTM D5185m | >15 | 0 | 0 | <1 |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 7 0 15 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 62 64 65 Magnesium ppm ASTM D5185m 1010 992 976 947 Catcium ppm ASTM D5185m 1070 1096 1170 1215 Phosphorus ppm ASTM D5185m 1070 1098 1083 1037 Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 260 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Solfur ppm ASTM D5185m 25 3 <td></td> <td>Antimony</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td></td> <td></td> <td></td> | | Antimony | ppm | ASTM D5185m | | | | |
| ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m07015BariumppmASTM D5185m0000MolybdenumppmASTM D5185m60626465ManganeseppmASTM D5185m1010992976947CalciumppmASTM D5185m1101992976947CalciumppmASTM D5185m1101109611701037ZincppmASTM D5185m11051096113031275SulfurppmASTM D5185m1270132413031275SulfurppmASTM D5185m2060327538483702CONTAMINANTmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m2060327538483702SiliconppmASTM D5185m520100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D5185m5300.60.30.4NitrationAbs/rmm*ASTM D744s300.68.33.1SulfationAbs/rmm*ASTM D74554020.320.321.9FLUID DEGRALDTIONmethodlimit/basecurrenthistory1history1AssilationAbs/rmm%ASTM D745s3026.515.315.5 <td></td> <td>Vanadium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td>0</td> <td>0</td> | | Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Boron ppm ASTM D5185m 0 7 0 15 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 62 64 65 Manganese ppm ASTM D5185m 0 | | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 62 64 65 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1070 1096 1170 1215 Phosphorus ppm ASTM D5185m 1150 1098 1030 1275 Sulfur ppm ASTM D5185m 260 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 3 1 2 Solicon ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % 'ASTM D7644 <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th> | | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 60 62 64 65 Manganese ppm ASTM D5185m 0 <1 | | Boron | ppm | ASTM D5185m | 0 | 7 | 0 | 15 |
| Marganesse ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1070 1096 1170 1215 Phosphorus ppm ASTM D5185m 1070 1098 1083 1037 Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 2060 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Solium ppm ASTM D5185m >20 3 1 2 Solium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % 'ASTM D7844 >3 0.6 0.3 0.4 Nitration Abs/cm 'ASTM D7845 >30 20.3 20.3 21.9 IDDDEGRAUTION Method | | Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Magnesium ppm ASTM D5185m 1010 992 976 947 Calcium ppm ASTM D5185m 1070 1096 1170 1215 Phosphorus ppm ASTM D5185m 1150 1098 1083 1037 Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 2060 3275 3848 3702 CONTAMINANTS method limit/base current history1 -history2 Silicon ppm ASTM D5185m 2060 32 1 2 Sodium ppm ASTM D5185m 206 3 1 2 Potassium ppm ASTM D5185m 20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.3 0.4 Nitration Abs/m *ASTM D7844 >3 0.6 8.3 3 Sulfation Abs/m | | Molybdenum | ppm | ASTM D5185m | 60 | 62 | 64 | 65 |
| Calcium ppm ASTM D5185m 1070 1096 1170 1215 Phosphorus ppm ASTM D5185m 1150 1098 1083 1037 Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 2060 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 1 2 Sodium ppm ASTM D5185m >20 1 0 0 INFRA-RED ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.3 0.4 Nitration Abs/m *ASTM D744 >3 0.6 8.3 3.1 Sulfation Abs/m *ASTM D744 >3 0.6 8.3 3.1 1.9 FLUID DEGRADATION | | Manganese | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1150 1098 1083 1037 Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 2060 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 1 2 Sodium ppm ASTM D5185m >25 3 1 2 Sodium ppm ASTM D5185m >25 3 1 2 Sodium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history1 history2 Soot % % %STM D7184 >3 0.6 0.3 0.4 Nitration Abs/rm %ASTM D7184 >30 20.3 20.3 21.9 FLUID DEGRADTION Method limit/base current history1 history1 history2 Oxida | | Magnesium | ppm | ASTM D5185m | 1010 | 992 | 976 | 947 |
| Zinc ppm ASTM D5185m 1270 1324 1303 1275 Sulfur ppm ASTM D5185m 2060 3275 3848 3702 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 3 1 2 Sodium ppm ASTM D5185m >25 3 1 2 Potassium ppm ASTM D5185m >20 1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.6 0.3 0.4 Nitration Abs/m *ASTM D7624 >20 7.5 6.8 8.3 Sulfation Abs/itmm *ASTM D7615 >30 20.3 20.3 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/itmm *ASTM D7615 >30 20.3 20.3 21.9 Thure Astread Abs | | Calcium | ppm | ASTM D5185m | 1070 | 1096 | 1170 | 1215 |
| SulfurppmASTM D5185m2060327538483702CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25312SodiumppmASTM D5185m>20312PotassiumppmASTM D5185m>20100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/1m*ASTM D715>3020.321.91.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1m*ASTM D744>2515.615.317.5 | | Phosphorus | ppm | ASTM D5185m | 1150 | 1098 | 1083 | 1037 |
| CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>25312SodiumppmASTM D5185m312PotassiumppmASTM D5185m>20100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/1mm*ASTM D7415>3020.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1mm*ASTM D7414>2515.615.317.5 | | Zinc | ppm | ASTM D5185m | 1270 | 1324 | 1303 | 1275 |
| SiliconppmASTM D5185m>25312SodiumppmASTM D5185mS312PotassiumppmASTM D5185m>20100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/1m*ASTM D7615>3020.320.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1m*ASTM D7414>2515.615.317.5 | | Sulfur | ppm | ASTM D5185m | 2060 | 3275 | 3848 | 3702 |
| SodiumppmASTM D5185mG312PotassiumppmASTM D5185m>20100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/1mm*ASTM D7415>3020.320.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/1mm*ASTM D7414>2515.615.317.5 | | CONTAMINAN | TS | method | limit/base | current | history1 | history2 |
| PotassiumppmASTM D5185m>20100INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/.1mm*ASTM D7415>3020.320.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.615.317.5 | | Silicon | ppm | ASTM D5185m | >25 | 3 | 1 | 2 |
| INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844>30.60.30.4NitrationAbs/cm*ASTM D7624>207.56.88.3SulfationAbs/.1mm*ASTM D7415>3020.320.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.615.317.5 | | Sodium | ppm | ASTM D5185m | | 3 | 1 | 2 |
| Soot % % *ASTM D7844 >3 0.6 0.3 0.4 Nitration Abs/cm *ASTM D7624 >20 7.5 6.8 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.3 20.3 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 15.3 17.5 | | Potassium | ppm | ASTM D5185m | >20 | 1 | 0 | 0 |
| Nitration Abs/cm *ASTM D7624 >20 7.5 6.8 8.3 Sulfation Abs/.1mm *ASTM D7415 >30 20.3 20.3 21.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.6 15.3 17.5 | | INFRA-RED | | method | limit/base | current | history1 | history2 |
| SulfationAbs/.1mm*ASTM D7415>3020.321.9FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.615.317.5 | | Soot % | % | *ASTM D7844 | >3 | 0.6 | 0.3 | 0.4 |
| FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.615.317.5 | | Nitration | Abs/cm | *ASTM D7624 | >20 | 7.5 | 6.8 | 8.3 |
| Oxidation Abs/.1mm *ASTM D7414 >25 15.6 15.3 17.5 | | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 20.3 | 20.3 | 21.9 |
| | | FLUID DEGRAD | DATION | method | limit/base | current | history1 | history2 |
| | | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 15.6 | 15.3 | 17.5 |
| | | | | | | 9.86 | 9.10 | 9.36 |



OIL ANALYSIS REPORT





Certificate L2367

Submitted By: MATT MANOLI

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