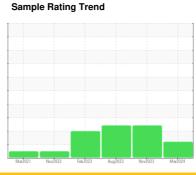


OIL ANALYSIS REPORT

SCHTRUCK 6328 [SCHTRUCK]

Front Diesel Engine

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





DIAGNOSIS

Recommendation

The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

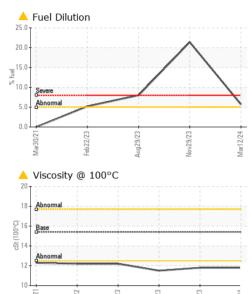
Fluid Condition

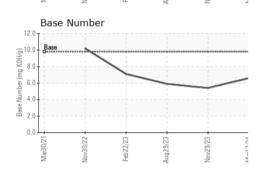
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

| Sample Number Client Info SBP0006999 (approximate) SBP0006098 (approximate) SBP0006999 (approximate) SBP0006098 (approximate) SSS565 (approximate) SSS565 (approximate) CBS714 (approximate) CB | iAL) | | Mar2021 | Nov2022 Feb2023 | Aug2023 Nov2023 | Mar2024 | |
|---|---------------|----------|-------------|-----------------|-----------------|-------------|----------------|
| Sample Date Client Info 12 Mar 2024 29 Nov 2023 29 Aug 20 Machine Age Machine Age mls Client Info 657194 633565 612562 Oil Orlanged Client Info 23629 21003 23316 Oil Changed Client Info Changed Changed Changed Sample Status Contraction ABNORMAL SEVERE SEVERE CONTAMINATION method limit/base current history1 history1 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG MEG NEG NEG NEG NEG Mean ASTM D5185m >80 50 65 77 Chromium ppm ASTM D5185m >2 2 2 2 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >30 2 <1 2 | SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
| Machine Age mls Client Info 657194 633565 612562 Oil Age mls Client Info 23629 21003 23316 Oil Changed Client Info Changed Changed Changed Changed Sample Status Bander Bander Bevere Severe Severe CONTAMINATION method Imitibase current history history Water WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history history Iron ppm ASTM D5185m >80 50 65 77 Chromium ppm ASTM D5185m >2 3 0 0 0 | Sample Number | | Client Info | | SBP0006999 | SBP0006008 | SBP0005064 |
| Oil Age mls Client Info 23629 21003 23316 Oil Changed Sample Status Client Info Changed Changed Changed Changed Changed Sample Status Changed Imitivate Changed Changed Changed Changed Changed Changed Changed Severe Changed Ch | Sample Date | | Client Info | | 12 Mar 2024 | 29 Nov 2023 | 29 Aug 2023 |
| Oil Changed Sample Status Client Info Changed ABNORMAL SEVERE Changed SEVERE Changed SEVERE Changed ABNORMAL SEVERE Changed SEVERE Changed ABNORMAL SEVERE Changed SEVERE | Machine Age | mls | Client Info | | 657194 | 633565 | 612562 |
| CONTAMINATION | Oil Age | mls | Client Info | | 23629 | 21003 | 23316 |
| CONTAMINATION method limit/base current history1 history1 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >80 50 65 77 Chromium ppm ASTM D5185m >5 2 2 2 Nickel ppm ASTM D5185m >2 <1 | Oil Changed | | Client Info | | Changed | Changed | Changed |
| Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >80 50 65 77 Chromium ppm ASTM D5185m >5 2 2 2 2 Nickel ppm ASTM D5185m >5 2 2 2 2 Silver ppm ASTM D5185m >3 0 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 2 Lead ppm ASTM D5185m >30 8 10 9 Copper ppm ASTM D5185m >5 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 | Sample Status | | | | ABNORMAL | SEVERE | SEVERE |
| Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >80 50 65 77 Chromium ppm ASTM D5185m >5 2 2 2 2 Nickel ppm ASTM D5185m >5 2 2 2 2 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 2 Lead ppm ASTM D5185m >30 8 10 9 Copper ppm ASTM D5185m >30 8 10 9 Capper ppm ASTM D5185m >5 1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 | CONTAMINATION | V | method | limit/base | current | history1 | history2 |
| WEAR METALS | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Iron | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >5 2 2 2 2 Nickel ppm ASTM D5185m >2 <1 <1 0 Titanium ppm ASTM D5185m >2 <1 <1 0 </td <td>WEAR METALS</td> <td></td> <td>method</td> <td>limit/base</td> <td>current</td> <td>history1</td> <td>history2</td> | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Nickel | Iron | ppm | ASTM D5185m | >80 | 50 | 65 | 77 |
| Titanium ppm ASTM D5185m 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 2 <1 2 Lead ppm ASTM D5185m >30 8 10 9 Copper ppm ASTM D5185m >150 2 2 3 Tin ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 <1 <1 Cadmium ppm ASTM D5185m 0 0 <0 <0 ADDTIVES method limit/base current history1 histor Boron ppm ASTM D5185m 0 0 0 0 ADDTIVES method limit/base current histor Boron <td>Chromium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>5</td> <td>2</td> <td>2</td> <td>2</td> | Chromium | ppm | ASTM D5185m | >5 | 2 | 2 | 2 |
| Silver | Nickel | ppm | ASTM D5185m | >2 | <1 | <1 | 0 |
| Aluminum ppm ASTM D5185m >30 2 <1 2 Lead ppm ASTM D5185m >30 8 10 9 Copper ppm ASTM D5185m >150 2 2 3 Tin ppm ASTM D5185m >5 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 <1 <1 <1 <1 <1 <1 <1 <1 | Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Lead ppm ASTM D5185m >30 8 10 9 Copper ppm ASTM D5185m >150 2 2 3 Tin ppm ASTM D5185m >5 1 <1 <1 <1 Vanadium ppm ASTM D5185m 0 <1 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 0 0 0 0 4 Barium ppm ASTM D5185m 0 0 0 0 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus p | Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >150 2 2 3 Tin ppm ASTM D5185m >5 1 <1 | Aluminum | ppm | ASTM D5185m | >30 | 2 | <1 | 2 |
| Tin ppm ASTM D5185m >5 1 <1 <1 <1 <1 Coloradium ppm ASTM D5185m >5 1 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 <1 0 < | Lead | ppm | ASTM D5185m | >30 | 8 | 10 | 9 |
| Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 41 <1 <1 Manganese ppm ASTM D5185m 0 <1 <1 <1 Manganesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 | Copper | ppm | ASTM D5185m | >150 | 2 | 2 | 3 |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 | Tin | ppm | ASTM D5185m | >5 | 1 | <1 | <1 |
| ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 0 <1 | Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| Boron ppm ASTM D5185m 0 0 0 4 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 60 49 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 | Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 60 60 49 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20< | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 60 60 49 55 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Fuel % ASTM D51 | Boron | ppm | ASTM D5185m | 0 | 0 | 0 | 4 |
| Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >2 | Barium | ppm | ASTM D5185m | 0 | 0 | 0 | 0 |
| Magnesium ppm ASTM D5185m 1010 989 870 870 Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Soot % % *ASTM D7844 >3 1.5 2.3 2 Soot % % *ASTM | Molybdenum | ppm | ASTM D5185m | 60 | 60 | 49 | 55 |
| Calcium ppm ASTM D5185m 1070 1109 986 1140 Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 | Manganese | ppm | ASTM D5185m | 0 | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1150 1106 872 909 Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 13 Potassium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Soot % % *ASTM D7844 >3 1.5 2.3 < | Magnesium | ppm | ASTM D5185m | 1010 | 989 | 870 | 870 |
| Zinc ppm ASTM D5185m 1270 1262 1100 1140 Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m >20 3 <1 8 Potassium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D5185m >20 3 <1 8 Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/:nm *ASTM D7415 >30 23.2 <t< td=""><td>Calcium</td><td>ppm</td><td>ASTM D5185m</td><td>1070</td><td>1109</td><td>986</td><td>1140</td></t<> | Calcium | ppm | ASTM D5185m | 1070 | 1109 | 986 | 1140 |
| Sulfur ppm ASTM D5185m 2060 3344 2321 3238 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m 8 8 13 Potassium ppm ASTM D5185m >20 3 <1 | Phosphorus | ppm | ASTM D5185m | 1150 | 1106 | 872 | 909 |
| CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m 8 8 13 Potassium ppm ASTM D5185m >20 3 <1 | Zinc | ppm | ASTM D5185m | 1270 | 1262 | 1100 | 1140 |
| Silicon ppm ASTM D5185m >20 6 3 4 Sodium ppm ASTM D5185m 8 8 13 Potassium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D3524 >5 ▲ 5.7 ▲ 21.4 ▲ 8.0 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Sulfur | ppm | ASTM D5185m | 2060 | 3344 | 2321 | 3238 |
| Sodium ppm ASTM D5185m 8 8 13 Potassium ppm ASTM D5185m >20 3 <1 | CONTAMINANTS | } | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 3 <1 8 Fuel % ASTM D3524 >5 ▲ 5.7 ▲ 21.4 ▲ 8.0 INFRA-RED method limit/base current history1 history1 history1 Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Silicon | ppm | ASTM D5185m | >20 | 6 | 3 | 4 |
| Fuel % ASTM D3524 >5 ▲ 5.7 ▲ 21.4 ▲ 8.0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Sodium | ppm | ASTM D5185m | | 8 | 8 | 13 |
| INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Potassium | ppm | ASTM D5185m | >20 | 3 | <1 | 8 |
| Soot % % *ASTM D7844 >3 1.5 2.3 2 Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Fuel | % | ASTM D3524 | >5 | <u>▲</u> 5.7 | ▲ 21.4 | ▲ 8.0 |
| Nitration Abs/cm *ASTM D7624 >20 9.3 9.7 9.8 Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 23.2 26.4 24.6 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Soot % | % | *ASTM D7844 | >3 | 1.5 | 2.3 | 2 |
| FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Nitration | Abs/cm | *ASTM D7624 | >20 | 9.3 | 9.7 | 9.8 |
| Oxidation Abs/.1mm *ASTM D7414 >25 20.9 24.4 22.4 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | | 26.4 | 24.6 |
| | | | | | | | la la ta mu.O. |
| Page Number (PN) ma KOUla ASTM D2006 Q Q G G G G G G G G G G G G G G G G G | FLUID DEGRADA | ATION | method | limit/base | current | history1 | nistoryz |
| Base Number (BN) mg KOH/g ASTM D2896 9.8 6.6 5.4 5.9 | | | | | | | |



OIL ANALYSIS REPORT





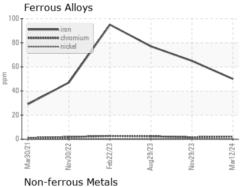
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | 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 |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG | NEG |
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |

11.8

11.8

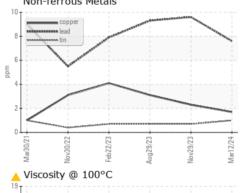
11.5

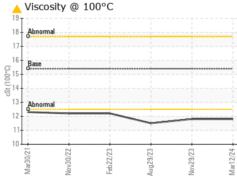
Visc @ 100°C **GRAPHS**

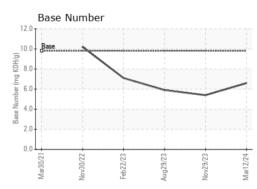


cSt

ASTM D445 15.4











Laboratory Sample No.

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

: SBP0006999 Lab Number : 06121444 Unique Number : 10930277

Received **Tested**

Diagnosed

: 21 Mar 2024 : 21 Mar 2024 - Wes Davis

: 18 Mar 2024

108 E Bay Road Plattsmouth, NE Contact: NICK DOTY

SCHMIDT TRANSPORTATION - 605449

Test Package: FLEET (Additional Tests: PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369. doty@liquidtrucking.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (402)949-9398 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

US 68048