



QuantityWare Working Paper

Annex A - Comparison of ASTM D1250 Standard Implementations

Detailed results for complete calculation grid

Version History

| Version | Date | Description |
|---------|------------|-------------------------------------|
| 00 | 2010-12-17 | Initial version |
| 01 | 2021-06-23 | Modern QW document style applied |
| 02 | 2023-11-01 | Editorial revision and confirmation |

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1. ASTM D1250-80 and ASTM D1250-04 - complete grid results



Editorial Note:

The decimal point and thousand separators for numbers and quantity values for this document are defined as follows: The decimal point is a comma ',', the thousand separator is a dot '.'. Example: 123.456.789,987

1.1. Table 5A – crude oil, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: -10 °API to 100 °API, increment 0,1 °API

Quantity compared: Base API gravity @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|--------|---------|------|------|------|-------|
| 1 | 3.732.918 | 107.799 | 50.478 | 57.321 | 107.799 | 0 | 0,1 | 59,7 | 82,2 |
| 2 | 1.381.166 | 18.944 | 2.673 | 16.271 | 18.944 | 0 | 0,1 | 59,5 | 47,0 |
| 3 | 1.381.166 | 18.944 | 2.673 | 16.271 | 18.944 | 0 | 0,1 | 59,5 | 47,0 |
| 4 | 2.351.752 | 88.855 | 47.805 | 41.050 | 88.855 | 0 | 0,1 | 59,7 | 82,2 |
| 5 | 2.351.752 | 88.855 | 47.805 | 41.050 | 88.855 | 0 | 0,1 | 59,7 | 82,2 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 2,9% | 46,8% | 53,2% | 2,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,4% | 14,1% | 85,9% | 1,4% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,4% | 14,1% | 85,9% | 1,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 3,8% | 53,8% | 46,2% | 3,8% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 3,8% | 53,8% | 46,2% | 3,8% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|-----|--------|------|------|------|-------|
| 1 | 1.164.148 | 26.431 | 25.533 | 898 | 26.431 | 0 | 0,1 | 59,7 | 82,2 |
| 2 | 317.818 | 2.549 | 2.156 | 393 | 2.549 | 0 | 0,1 | 59,5 | 47,0 |
| 3 | 317.818 | 2.549 | 2.156 | 393 | 2.549 | 0 | 0,1 | 59,5 | 47,0 |
| 4 | 846.330 | 23.882 | 23.377 | 505 | 23.882 | 0 | 0,1 | 59,7 | 82,2 |
| 5 | 846.330 | 23.882 | 23.377 | 505 | 23.882 | 0 | 0,1 | 59,7 | 82,2 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 2,3% | 96,6% | 3,4% | 2,3% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,8% | 84,6% | 15,4% | 0,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,8% | 84,6% | 15,4% | 0,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 2,8% | 97,9% | 2,1% | 2,8% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,8% | 97,9% | 2,1% | 2,8% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|------|-------|
| 1 | 2.568.770 | 81.368 | 24.945 | 56.423 | 81.368 | 0 | 0,1 | 60,3 | 82,3 |
| 2 | 1.063.348 | 16.395 | 517 | 15.878 | 16.395 | 0 | 0,1 | 60,5 | 46,7 |
| 3 | 1.063.348 | 16.395 | 517 | 15.878 | 16.395 | 0 | 0,1 | 60,5 | 46,7 |
| 4 | 1.505.422 | 64.973 | 24.428 | 40.545 | 64.973 | 0 | 0,1 | 60,3 | 82,3 |
| 5 | 1.505.422 | 64.973 | 24.428 | 40.545 | 64.973 | 0 | 0,1 | 60,3 | 82,3 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 2,3% | 30,7% | 69,3% | 2,3% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,5% | 3,2% | 96,8% | 1,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,5% | 3,2% | 96,8% | 1,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 4,3% | 37,6% | 62,4% | 4,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 4,3% | 37,6% | 62,4% | 4,3% | 0,0% | 1980 Ext./1980 Inc. |

1.2. Table 5B – products, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: -10 °API to 100 °API, increment 0,1 °API

Quantity compared: Base API gravity @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|-------|-------|
| 1 | 3.169.913 | 98.219 | 37.699 | 60.520 | 98.115 | 104 | 0,4 | 301,9 | 87,0 |
| 2 | 1.837.055 | 27.612 | 5.018 | 22.594 | 27.612 | 0 | 0,1 | 59,7 | 76,7 |
| 3 | 1.837.055 | 27.612 | 5.018 | 22.594 | 27.612 | 0 | 0,1 | 59,7 | 76,7 |
| 4 | 1.332.858 | 70.607 | 32.681 | 37.926 | 70.503 | 104 | 0,4 | 301,9 | 87,0 |
| 5 | 1.332.858 | 70.607 | 32.681 | 37.926 | 70.503 | 104 | 0,4 | 301,9 | 87,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,1% | 38,4% | 61,6% | 3,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,5% | 18,2% | 81,8% | 1,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,5% | 18,2% | 81,8% | 1,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 5,3% | 46,3% | 53,7% | 5,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 5,3% | 46,3% | 53,7% | 5,3% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|---------|--------|--------|-----|--------|------|------|------|-------|
| 1 | 623.911 | 11.801 | 10.926 | 875 | 11.801 | 0 | 0,1 | 59,7 | 76,7 |
| 2 | 487.093 | 4.946 | 4.213 | 733 | 4.946 | 0 | 0,1 | 59,7 | 76,7 |
| 3 | 487.093 | 4.946 | 4.213 | 733 | 4.946 | 0 | 0,1 | 59,7 | 76,7 |
| 4 | 136.818 | 6.855 | 6.713 | 142 | 6.855 | 0 | 0,1 | 59,2 | 88,6 |
| 5 | 136.818 | 6.855 | 6.713 | 142 | 6.855 | 0 | 0,1 | 59,2 | 88,6 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,9% | 92,6% | 7,4% | 1,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,0% | 85,2% | 14,8% | 1,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,0% | 85,2% | 14,8% | 1,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 5,0% | 97,9% | 2,1% | 5,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 5,0% | 97,9% | 2,1% | 5,0% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|-------|-------|
| 1 | 2.546.002 | 86.418 | 26.773 | 59.645 | 86.314 | 104 | 0,4 | 301,9 | 87 |
| 2 | 1.349.962 | 22.666 | 805 | 21.861 | 22.666 | 0 | 0,1 | 60,3 | 76,1 |
| 3 | 1.349.962 | 22.666 | 805 | 21.861 | 22.666 | 0 | 0,1 | 60,3 | 76,1 |
| 4 | 1.196.040 | 63.752 | 25.968 | 37.784 | 63.648 | 104 | 0,4 | 301,9 | 87 |
| 5 | 1.196.040 | 63.752 | 25.968 | 37.784 | 63.648 | 104 | 0,4 | 301,9 | 87 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,4% | 31,0% | 69,0% | 3,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,7% | 3,6% | 96,4% | 1,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,7% | 3,6% | 96,4% | 1,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 5,3% | 40,7% | 59,3% | 5,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 5,3% | 40,7% | 59,3% | 5,3% | 0,0% | 1980 Ext./1980 Inc. |

1.3. Table 5D – lubricants, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: -10 °API to 45 °API, increment 0,1 °API

Quantity compared: Base API gravity @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|------|-------|
| 1 | 1.814.635 | 52.991 | 37.131 | 15.86 | 52.991 | 0 | 0,1 | 59,3 | 38,7 |
| 2 | 1.524.420 | 45.836 | 30.213 | 15.623 | 45.836 | 0 | 0,1 | 59,3 | 38,7 |
| 3 | 1.524.420 | 45.836 | 30.213 | 15.623 | 45.836 | 0 | 0,1 | 59,3 | 38,7 |
| 4 | 290.215 | 7.155 | 6.918 | 237 | 7.155 | 0 | 0,1 | -0,1 | -9,0 |
| 5 | 290.215 | 7.155 | 6.918 | 237 | 7.155 | 0 | 0,1 | -0,1 | -9,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 2,9% | 70,1% | 29,9% | 2,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,0% | 65,9% | 34,1% | 3,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,0% | 65,9% | 34,1% | 3,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 2,5% | 96,7% | 3,3% | 2,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,5% | 96,7% | 3,3% | 2,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|---------|--------|--------|-----|--------|------|------|------|-------|
| 1 | 598.37 | 14.122 | 13.727 | 395 | 14.122 | 0 | 0,1 | 59,3 | 38,7 |
| 2 | 316.762 | 7.325 | 6.981 | 344 | 7.325 | 0 | 0,1 | 59,3 | 38,7 |
| 3 | 316.762 | 7.325 | 6.981 | 344 | 7.325 | 0 | 0,1 | 59,3 | 38,7 |
| 4 | 281.608 | 6.797 | 6.746 | 51 | 6.797 | 0 | 0,1 | -0,1 | -9,0 |
| 5 | 281.608 | 6.797 | 6.746 | 51 | 6.797 | 0 | 0,1 | -0,1 | -9,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|------|------|------|-----------------------|
| 1 | 2,4% | 97,2% | 2,8% | 2,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 2,3% | 95,3% | 4,7% | 2,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 2,3% | 95,3% | 4,7% | 2,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 2,4% | 99,2% | 0,8% | 2,4% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,4% | 99,2% | 0,8% | 2,4% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|-------|-------|
| 1 | 1.216.265 | 38.869 | 23.404 | 15.465 | 38.869 | 0 | 0,1 | 60,7 | 38,7 |
| 2 | 1.207.658 | 38.511 | 23.232 | 15.279 | 38.511 | 0 | 0,1 | 60,7 | 38,7 |
| 3 | 1.207.658 | 38.511 | 23.232 | 15.279 | 38.511 | 0 | 0,1 | 60,7 | 38,7 |
| 4 | 8.607 | 358 | 172 | 186 | 358 | 0 | 0,1 | 300,1 | 3,3 |
| 5 | 8.607 | 358 | 172 | 186 | 358 | 0 | 0,1 | 300,1 | 3,3 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,2% | 60,2% | 39,8% | 3,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,2% | 60,3% | 39,7% | 3,2% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,2% | 60,3% | 39,7% | 3,2% | 0,0% | 1980 R./1980 Inc. |
| 4 | 4,2% | 48,0% | 52,0% | 4,2% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 4,2% | 48,0% | 52,0% | 4,2% | 0,0% | 1980 Ext./1980 Inc. |

1.4. Table 23A – crude oil, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: 0,6112 relative density to 1,1646 relative density, increment 0,0001 relative density

Quantity compared: Base relative density @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 18.676.835 | 14.845.465 | 7.692.392 | 7.153.073 | 7.687.014 | 7.158.451 | 0,0003 | 59,9 | 0,6323 |
| 2 | 9.701.826 | 7.717.658 | 3.974.823 | 3.742.835 | 3.973.597 | 3.744.061 | 0,0003 | 59,9 | 0,6323 |
| 3 | 1.940.189 | 132.568 | 110.995 | 21.573 | 132.568 | 0 | 0,0001 | 59,9 | 0,6325 |
| 4 | 8.975.009 | 7.127.807 | 3.717.569 | 3.410.238 | 3.713.417 | 3.414.390 | 0,0003 | 59,5 | 1,1073 |
| 5 | 1.794.938 | 204.802 | 155.646 | 49.156 | 204.802 | 0 | 0,0001 | 59,5 | 1,1075 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 79,5% | 51,8% | 48,2% | 41,2% | 38,3% | 2004 R./2004 Inc. |
| 2 | 79,5% | 51,5% | 48,5% | 41,0% | 38,6% | 1980 R./2004 Inc. |
| 3 | 6,8% | 83,7% | 16,3% | 6,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 79,4% | 52,2% | 47,8% | 41,4% | 38,0% | 1980 Ext. R/2004 Inc. |
| 5 | 11,4% | 76,0% | 24,0% | 11,4% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 6.150.843 | 4.951.924 | 2.425.555 | 2.526.369 | 2.402.190 | 2.549.734 | 0,0003 | 59,9 | 0,6323 |
| 2 | 2.746.516 | 2.204.688 | 1.088.288 | 1.116.400 | 1.083.653 | 1.121.035 | 0,0003 | 59,9 | 0,6323 |
| 3 | 549.307 | 21.565 | 2.043 | 19.522 | 21.565 | 0 | 0,0001 | 59,9 | 0,6325 |
| 4 | 3.404.327 | 2.747.236 | 1.337.267 | 1.409.969 | 1.318.537 | 1.428.699 | 0,0003 | 59,5 | 11,073 |
| 5 | 681.101 | 49.222 | 696 | 48.526 | 49.222 | 0 | 0,0001 | 59,5 | 11,075 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,5% | 49,0% | 51,0% | 39,1% | 41,5% | 2004 R./2004 Inc. |
| 2 | 80,3% | 49,4% | 50,6% | 39,5% | 40,8% | 1980 R./2004 Inc. |
| 3 | 3,9% | 9,5% | 90,5% | 3,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,7% | 48,7% | 51,3% | 38,7% | 42,0% | 1980 Ext. R/2004 Inc. |
| 5 | 7,2% | 1,4% | 98,6% | 7,2% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 12.525.992 | 9.893.541 | 5.266.837 | 4.626.704 | 5.284.824 | 4.608.717 | 0,0003 | 60,1 | 0,6232 |
| 2 | 6.955.310 | 5.512.970 | 2.886.535 | 2.626.435 | 2.889.944 | 2.623.026 | 0,0003 | 60,1 | 0,6232 |
| 3 | 1.390.882 | 111.003 | 108.952 | 2.051 | 111.003 | 0 | 0,0001 | 60,1 | 0,6230 |
| 4 | 5.570.682 | 4.380.571 | 2.380.302 | 2.000.269 | 2.394.880 | 1.985.691 | 0,0003 | 60,5 | 10,992 |
| 5 | 1.113.837 | 155.58 | 154.95 | 630 | 155.58 | 0 | 0,0001 | 60,5 | 10,990 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 79,0% | 53,2% | 46,8% | 42,2% | 36,8% | 2004 R./2004 Inc. |
| 2 | 79,3% | 52,4% | 47,6% | 41,6% | 37,7% | 1980 R./2004 Inc. |
| 3 | 8,0% | 98,2% | 1,8% | 8,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 78,6% | 54,3% | 45,7% | 43,0% | 35,6% | 1980 Ext. R/2004 Inc. |
| 5 | 14,0% | 99,6% | 0,4% | 14,0% | 0,0% | 1980 Ext./1980 Inc. |

1.5. Table 23B – products, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: 0,6112 relative density to 1,1646 relative density, increment 0,0001 relative density

Quantity compared: Base relative density @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|--------|-------|--------|
| 1 | 18.478.116 | 14.666.464 | 7.582.618 | 7.083.846 | 7.538.094 | 7.128.370 | 0,0015 | 301,8 | 0,6477 |
| 2 | 8.597.176 | 6.854.708 | 3.517.663 | 3.337.045 | 3.474.549 | 3.380.159 | 0,0003 | 59,9 | 0,6618 |
| 3 | 1.719.410 | 118.556 | 99.639 | 18.917 | 118.556 | 0 | 0,0001 | 59,9 | 0,6620 |
| 4 | 9.880.940 | 7.811.756 | 4.064.955 | 3.746.801 | 4.063.545 | 3.748.211 | 0,0015 | 301,8 | 0,6477 |
| 5 | 1.975.964 | 250.817 | 191.07 | 59.747 | 248.944 | 1.873 | 0,0013 | 301,7 | 0,6480 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 79,4% | 51,7% | 48,3% | 40,8% | 38,6% | 2004 R./2004 Inc. |
| 2 | 79,7% | 51,3% | 48,7% | 40,4% | 39,3% | 1980 R./2004 Inc. |
| 3 | 6,9% | 84,0% | 16,0% | 6,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 79,1% | 52,0% | 48,0% | 41,1% | 37,9% | 1980 Ext. R/2004 Inc. |
| 5 | 12,7% | 76,2% | 23,8% | 12,6% | 0,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|--------|
| 1 | 6.150.595 | 4.937.467 | 2.410.537 | 2.526.930 | 2.412.794 | 2.524.673 | 0,0005 | -49,9 | 0,8318 |
| 2 | 2.505.325 | 2.008.070 | 990.713 | 1.017.357 | 991.163 | 1.016.907 | 0,0003 | 59,9 | 0,6618 |
| 3 | 501.065 | 19.115 | 2.143 | 16.972 | 19.115 | 0 | 0,0001 | 59,9 | 0,6620 |
| 4 | 3.645.270 | 2.929.397 | 1.419.824 | 1.509.573 | 1.421.631 | 1.507.766 | 0,0005 | -49,9 | 0,8318 |
| 5 | 729.289 | 53.069 | 804 | 52.265 | 53.069 | 0 | 0,0001 | 59,9 | 0,6430 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,3% | 48,8% | 51,2% | 39,2% | 41,0% | 2004 R./2004 Inc. |
| 2 | 80,2% | 49,3% | 50,7% | 39,6% | 40,6% | 1980 R./2004 Inc. |
| 3 | 3,8% | 11,2% | 88,8% | 3,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,4% | 48,5% | 51,5% | 39,0% | 41,4% | 1980 Ext. R/2004 Inc. |
| 5 | 7,3% | 1,5% | 98,5% | 7,3% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|--------|-------|--------|
| 1 | 12.327.521 | 9.728.997 | 5.172.081 | 4.556.916 | 5.125.300 | 4.603.697 | 0,0015 | 301,8 | 0,6477 |
| 2 | 6.091.851 | 4.846.638 | 2.526.950 | 2.319.688 | 2.483.386 | 2.363.252 | 0,0003 | 60,1 | 0,6537 |
| 3 | 1.218.345 | 99.441 | 97.496 | 1.945 | 99.441 | 0 | 0,0001 | 60,1 | 0,6535 |
| 4 | 6.235.670 | 4.882.359 | 2.645.131 | 2.237.228 | 2.641.914 | 2.240.445 | 0,0015 | 301,8 | 0,6477 |
| 5 | 1.246.675 | 197.748 | 190.266 | 7.482 | 195.875 | 1.873 | 0,0013 | 301,7 | 0,6480 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 78,9% | 53,2% | 46,8% | 41,6% | 37,3% | 2004 R./2004 Inc. |
| 2 | 79,6% | 52,1% | 47,9% | 40,8% | 38,8% | 1980 R./2004 Inc. |
| 3 | 8,2% | 98,0% | 2,0% | 8,2% | 0,0% | 1980 R./1980 Inc. |
| 4 | 78,3% | 54,2% | 45,8% | 42,4% | 35,9% | 1980 Ext. R/2004 Inc. |
| 5 | 15,9% | 96,2% | 3,8% | 15,7% | 0,2% | 1980 Ext./1980 Inc. |

1.6. Table 23D – lubricants, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Observed density: 0,8017 relative density to 1,1646 relative density, increment 0,0001 relative density

Quantity compared: Base relative density @ 60 °F

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 11.791.560 | 9.432.517 | 4.842.679 | 4.589.838 | 4.718.018 | 4.714.499 | 0,0003 | 59,0 | 0,8057 |
| 2 | 9.797.679 | 7.837.702 | 4.069.737 | 3.767.965 | 3.919.825 | 3.917.877 | 0,0003 | 59,0 | 0,8057 |
| 3 | 1.959.175 | 176.715 | 162.978 | 13.737 | 176.715 | 0 | 0,0001 | 59,0 | 0,8055 |
| 4 | 1.993.881 | 1.594.815 | 772.942 | 821.873 | 798.193 | 796.622 | 0,0003 | 65,3 | 11,627 |
| 5 | 398.893 | 28.036 | 2.505 | 25.531 | 28.036 | 0 | 0,0001 | 65,3 | 11,625 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 51,3% | 48,7% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 51,9% | 48,1% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 9,0% | 92,2% | 7,8% | 9,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,0% | 48,5% | 51,5% | 40,0% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | 7,0% | 8,9% | 91,1% | 7,0% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 4.042.329 | 3.233.480 | 1.581.391 | 1.652.089 | 1.617.702 | 1.615.778 | 0,0003 | 59,0 | 0,8057 |
| 2 | 2.115.103 | 1.691.946 | 836.034 | 855.912 | 846.325 | 845.621 | 0,0003 | 59,0 | 0,8057 |
| 3 | 423.14 | 14.468 | 2.236 | 12.232 | 14.468 | 0 | 0,0001 | 59,0 | 0,8055 |
| 4 | 1.927.226 | 1.541.534 | 745.357 | 796.177 | 771.377 | 770.157 | 0,0003 | -0,1 | 10,263 |
| 5 | 385.562 | 25.662 | 132 | 25.53 | 25.662 | 0 | 0,0001 | -0,1 | 10,265 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 48,9% | 51,1% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 49,4% | 50,6% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 3,4% | 15,5% | 84,5% | 3,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,0% | 48,4% | 51,6% | 40,0% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | 6,7% | 0,5% | 99,5% | 6,7% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|--------|------|--------|
| 1 | 7.749.231 | 6.199.037 | 3.261.288 | 2.937.749 | 3.100.316 | 3.098.721 | 0,0003 | 61 | 0,8018 |
| 2 | 7.682.576 | 6.145.756 | 3.233.703 | 2.912.053 | 3.073.500 | 3.072.256 | 0,0003 | 61 | 0,8018 |
| 3 | 1.536.035 | 162.247 | 160.742 | 1.505 | 162.247 | 0 | 0,0001 | 61 | 0,8020 |
| 4 | 66.655 | 53.281 | 27.585 | 25.696 | 26.816 | 26.465 | 0,0003 | 65,3 | 11,627 |
| 5 | 13.331 | 2.374 | 2.373 | 1 | 2.374 | 0 | 0,0001 | 65,3 | 11,625 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 52,6% | 47,4% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 52,6% | 47,4% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 10,6% | 99,1% | 0,9% | 10,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 79,9% | 51,8% | 48,2% | 40,2% | 39,7% | 1980 Ext. R/2004 Inc. |
| 5 | 17,8% | 100,0% | 0,0% | 17,8% | 0,0% | 1980 Ext./1980 Inc. |

1.7. Table 53A – crude oil, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 611,2 kg/m³ to 1.163,8 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 15 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 20.724.705 | 16.480.191 | 8.813.893 | 7.666.298 | 8.489.214 | 7.990.977 | 0,3 | 14,95 | 613,8 |
| 2 | 8.436.355 | 6.708.254 | 3.554.571 | 3.153.683 | 3.456.169 | 3.252.085 | 0,3 | 14,80 | 818,3 |
| 3 | 1.687.271 | 213.33 | 194.124 | 19.206 | 213.33 | 0 | 0,1 | 14,80 | 818,5 |
| 4 | 12.288.350 | 9.771.937 | 5.259.322 | 4.512.615 | 5.033.045 | 4.738.892 | 0,3 | 14,95 | 613,8 |
| 5 | 2.456.872 | 507.124 | 409.264 | 97.86 | 507.124 | 0 | 0,1 | 14,95 | 614,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 79,5% | 53,5% | 46,5% | 41,0% | 38,6% | 2004 R./2004 Inc. |
| 2 | | 79,5% | 53,0% | 47,0% | 41,0% | 38,5% | 1980 R./2004 Inc. |
| 3 | | 12,6% | 91,0% | 9,0% | 12,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 79,5% | 53,8% | 46,2% | 41,0% | 38,6% | 1980 Ext. R/2004 Inc. |
| 5 | | 20,6% | 80,7% | 19,3% | 20,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 6.770.665 | 5.454.229 | 2.628.913 | 2.825.316 | 2.632.734 | 2.821.495 | 0,3 | 14,95 | 613,8 |
| 2 | 2.066.595 | 1.658.390 | 812.551 | 845.839 | 816.423 | 841.967 | 0,3 | 14,80 | 818,3 |
| 3 | 413.319 | 19.209 | 5 | 19.204 | 19.209 | 0 | 0,1 | 14,80 | 818,5 |
| 4 | 4.704.070 | 3.795.839 | 1.816.362 | 1.979.477 | 1.816.311 | 1.979.528 | 0,3 | 14,95 | 613,8 |
| 5 | 940.556 | 97.861 | 7 | 97.854 | 97.861 | 0 | 0,1 | 14,95 | 614,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|--------|-------|-------|-----------------------|
| 1 | | 80,6% | 48,2% | 51,8% | 38,9% | 41,7% | 2004 R./2004 Inc. |
| 2 | | 80,2% | 49,0% | 51,0% | 39,5% | 40,7% | 1980 R./2004 Inc. |
| 3 | | 4,6% | 0,0% | 100,0% | 4,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 80,7% | 47,9% | 52,1% | 38,6% | 42,1% | 1980 Ext. R/2004 Inc. |
| 5 | | 10,4% | 0,0% | 100,0% | 10,4% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 13.954.040 | 11.025.962 | 6.184.980 | 4.840.982 | 5.856.480 | 5.169.482 | 0,3 | 15,05 | 614,2 |
| 2 | 6.369.760 | 5.049.864 | 2.742.020 | 2.307.844 | 2.639.746 | 2.410.118 | 0,3 | 15,20 | 818,2 |
| 3 | 1.273.952 | 194.121 | 194.119 | 2 | 194.121 | 0 | 0,1 | 15,20 | 818,0 |
| 4 | 7.584.280 | 5.976.098 | 3.442.960 | 2.533.138 | 3.216.734 | 2.759.364 | 0,3 | 15,05 | 614,2 |
| 5 | 1.516.316 | 409.263 | 409.257 | 6 | 409.263 | 0 | 0,1 | 15,05 | 614,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|-------|-------|-------|-----------------------|
| 1 | | 79,0% | 56,1% | 43,9% | 42,0% | 37,0% | 2004 R./2004 Inc. |
| 2 | | 79,3% | 54,3% | 45,7% | 41,4% | 37,8% | 1980 R./2004 Inc. |
| 3 | | 15,2% | 100,0% | 0,0% | 15,2% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 78,8% | 57,6% | 42,4% | 42,4% | 36,4% | 1980 Ext. R/2004 Inc. |
| 5 | | 27,0% | 100,0% | 0,0% | 27,0% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|---------|-----------|------|------|-------|-------|
| 1 | 20.724.705 | 3.605.133 | 3.018.445 | 586.688 | 3.605.133 | 0 | 0,1 | 14,95 | 613,8 |
| 2 | 8.436.330 | 1.067.931 | 971.572 | 96.359 | 1.067.931 | 0 | 0,1 | 14,80 | 818,2 |
| 3 | 8.436.330 | 1.067.931 | 971.572 | 96.359 | 1.067.931 | 0 | 0,1 | 14,80 | 818,2 |
| 4 | 12.288.375 | 2.537.202 | 2.046.873 | 490.329 | 2.537.202 | 0 | 0,1 | 14,95 | 613,8 |
| 5 | 12.288.375 | 2.537.202 | 2.046.873 | 490.329 | 2.537.202 | 0 | 0,1 | 14,95 | 613,8 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 17,4% | 83,7% | 16,3% | 17,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 12,7% | 91,0% | 9,0% | 12,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 12,7% | 91,0% | 9,0% | 12,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 20,6% | 80,7% | 19,3% | 20,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 20,6% | 80,7% | 19,3% | 20,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|---------|------|------|-------|-------|
| 1 | 6.770.665 | 586.683 | 48 | 586.635 | 586.683 | 0 | 0,1 | 14,95 | 613,8 |
| 2 | 2.066.594 | 96.355 | 15 | 96.34 | 96.355 | 0 | 0,1 | 14,80 | 818,2 |
| 3 | 2.066.594 | 96.355 | 15 | 96.34 | 96.355 | 0 | 0,1 | 14,80 | 818,2 |
| 4 | 4.704.071 | 490.328 | 33 | 490.295 | 490.328 | 0 | 0,1 | 14,95 | 613,8 |
| 5 | 4.704.071 | 490.328 | 33 | 490.295 | 490.328 | 0 | 0,1 | 14,95 | 613,8 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 8,7% | 0,0% | 100,0% | 8,7% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,7% | 0,0% | 100,0% | 4,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,7% | 0,0% | 100,0% | 4,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 10,4% | 0,0% | 100,0% | 10,4% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 10,4% | 0,0% | 100,0% | 10,4% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----|-----------|------|------|-------|-------|
| 1 | 13.954.040 | 3.018.450 | 3.018.397 | 53 | 3.018.450 | 0 | 0,1 | 15,05 | 613,7 |
| 2 | 6.369.736 | 971.576 | 971.557 | 19 | 971.576 | 0 | 0,1 | 15,20 | 818,0 |
| 3 | 6.369.736 | 971.576 | 971.557 | 19 | 971.576 | 0 | 0,1 | 15,20 | 818,0 |
| 4 | 7.584.304 | 2.046.874 | 2.046.840 | 34 | 2.046.874 | 0 | 0,1 | 15,05 | 613,7 |
| 5 | 7.584.304 | 2.046.874 | 2.046.840 | 34 | 2.046.874 | 0 | 0,1 | 15,05 | 613,7 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 21,6% | 100,0% | 0,0% | 21,6% | 0,0% | 2004 R./2004 Inc. |
| 2 | 15,3% | 100,0% | 0,0% | 15,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 15,3% | 100,0% | 0,0% | 15,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 27,0% | 100,0% | 0,0% | 27,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 27,0% | 100,0% | 0,0% | 27,0% | 0,0% | 1980 Ext./1980 Inc. |

1.8. Table 53B – products, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 611,2 kg/m³ to 1.163,9 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 15 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 20.505.265 | 16.421.101 | 8.765.701 | 7.655.400 | 8.219.531 | 8.201.570 | 1,8 | 149,75 | 646,7 |
| 2 | 10.582.625 | 8.442.015 | 4.379.320 | 4.062.695 | 4.260.350 | 4.181.665 | 0,5 | -15,30 | 800,3 |
| 3 | 2.116.525 | 166.851 | 144.851 | 22 | 158.305 | 8.546 | 0,2 | -8,00 | 793,0 |
| 4 | 9.922.640 | 7.979.086 | 4.386.381 | 3.592.705 | 3.959.181 | 4.019.905 | 1,8 | 149,75 | 646,7 |
| 5 | 1.983.467 | 328.594 | 294.088 | 34.506 | 240.893 | 87.701 | 1,7 | 149,95 | 646,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 80,1% | 53,4% | 46,6% | 40,1% | 40,0% | 2004 R./2004 Inc. |
| 2 | | 79,8% | 51,9% | 48,1% | 40,3% | 39,5% | 1980 R./2004 Inc. |
| 3 | | 7,9% | 86,8% | 13,2% | 7,5% | 0,4% | 1980 R./1980 Inc. |
| 4 | | 80,4% | 55,0% | 45,0% | 39,9% | 40,5% | 1980 Ext. R/2004 Inc. |
| 5 | | 16,6% | 89,5% | 10,5% | 12,1% | 4,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 6.771.696 | 5.439.650 | 2.664.036 | 2.775.614 | 2.663.685 | 2.775.965 | 0,8 | -44,05 | 822,8 |
| 2 | 2.788.500 | 2.236.885 | 1.099.423 | 1.137.462 | 1.103.097 | 1.133.788 | 0,5 | -15,30 | 800,3 |
| 3 | 557.7 | 22.083 | 109 | 21.974 | 21.114 | 969 | 0,2 | -8,00 | 793,0 |
| 4 | 3.983.196 | 3.202.765 | 1.564.613 | 1.638.152 | 1.560.588 | 1.642.177 | 0,8 | -44,05 | 822,8 |
| 5 | 796.119 | 35.794 | 1.308 | 34.486 | 23.323 | 12.471 | 0,5 | -49,75 | 831,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 80,3% | 49,0% | 51,0% | 39,3% | 41,0% | 2004 R./2004 Inc. |
| 2 | | 80,2% | 49,1% | 50,9% | 39,6% | 40,7% | 1980 R./2004 Inc. |
| 3 | | 4,0% | 0,5% | 99,5% | 3,8% | 0,2% | 1980 R./1980 Inc. |
| 4 | | 80,4% | 48,9% | 51,1% | 39,2% | 41,2% | 1980 Ext. R/2004 Inc. |
| 5 | | 4,5% | 3,7% | 96,3% | 2,9% | 1,6% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 13.733.569 | 10.981.451 | 6.101.665 | 4.879.786 | 5.555.846 | 5.425.605 | 1,8 | 149,75 | 646,7 |
| 2 | 7.794.125 | 6.205.130 | 3.279.897 | 2.925.233 | 3.157.253 | 3.047.877 | 0,3 | 15,20 | 792,7 |
| 3 | 1.558.825 | 144.768 | 144.742 | 26 | 137.191 | 7.577 | 0,2 | 48,80 | 740,5 |
| 4 | 5.939.444 | 4.776.321 | 2.821.768 | 1.954.553 | 2.398.593 | 2.377.728 | 1,8 | 149,75 | 646,7 |
| 5 | 1.187.348 | 292.8 | 292.78 | 20 | 217.57 | 75.23 | 1,7 | 149,95 | 646,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|-------|-------|-------|-----------------------|
| 1 | | 80,0% | 55,6% | 44,4% | 40,5% | 39,5% | 2004 R./2004 Inc. |
| 2 | | 79,6% | 52,9% | 47,1% | 40,5% | 39,1% | 1980 R./2004 Inc. |
| 3 | | 9,3% | 100,0% | 0,0% | 8,8% | 0,5% | 1980 R./1980 Inc. |
| 4 | | 80,4% | 59,1% | 40,9% | 40,4% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 24,7% | 100,0% | 0,0% | 18,3% | 6,3% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|---------|-----------|---------|------|--------|-------|
| 1 | 20.505.265 | 2.477.167 | 2.194.605 | 282.562 | 1.995.961 | 481.206 | 1,7 | 149,95 | 646,2 |
| 2 | 10.573.985 | 834.292 | 723.949 | 110.343 | 791.552 | 42.74 | 0,2 | -7,60 | 793,4 |
| 3 | 10.573.985 | 834.292 | 723.949 | 110.343 | 791.552 | 42.74 | 0,2 | -7,60 | 793,4 |
| 4 | 9.931.280 | 1.642.875 | 1.470.656 | 172.219 | 1.204.409 | 438.466 | 1,7 | 149,95 | 646,2 |
| 5 | 9.931.280 | 1.642.875 | 1.470.656 | 172.219 | 1.204.409 | 438.466 | 1,7 | 149,95 | 646,2 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|------|-----------------------|
| 1 | | 12,1% | 88,6% | 11,4% | 9,7% | 2,3% | 2004 R./2004 Inc. |
| 2 | | 7,9% | 86,8% | 13,2% | 7,5% | 0,4% | 1980 R./2004 Inc. |
| 3 | | 7,9% | 86,8% | 13,2% | 7,5% | 0,4% | 1980 R./1980 Inc. |
| 4 | | 16,5% | 89,5% | 10,5% | 12,1% | 4,4% | 1980 Ext. R/2004 Inc. |
| 5 | | 16,5% | 89,5% | 10,5% | 12,1% | 4,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-------|---------|---------|--------|------|--------|-------|
| 1 | 6.771.696 | 289.64 | 7.309 | 282.331 | 222.219 | 67.421 | 0,5 | -49,20 | 830,6 |
| 2 | 2.785.860 | 110.733 | 518 | 110.215 | 105.666 | 5.067 | 0,2 | -7,60 | 793,4 |
| 3 | 2.785.860 | 110.733 | 518 | 110.215 | 105.666 | 5.067 | 0,2 | -7,60 | 793,4 |
| 4 | 3.985.836 | 178.907 | 6.791 | 172.116 | 116.553 | 62.354 | 0,5 | -49,20 | 830,6 |
| 5 | 3.985.836 | 178.907 | 6.791 | 172.116 | 116.553 | 62.354 | 0,5 | -49,20 | 830,6 |

| C | | P | PG | PL | P1 | PX | |
|---|--|------|------|-------|------|------|-----------------------|
| 1 | | 4,3% | 2,5% | 97,5% | 3,3% | 1,0% | 2004 R./2004 Inc. |
| 2 | | 4,0% | 0,5% | 99,5% | 3,8% | 0,2% | 1980 R./2004 Inc. |
| 3 | | 4,0% | 0,5% | 99,5% | 3,8% | 0,2% | 1980 R./1980 Inc. |
| 4 | | 4,5% | 3,8% | 96,2% | 2,9% | 1,6% | 1980 Ext. R/2004 Inc. |
| 5 | | 4,5% | 3,8% | 96,2% | 2,9% | 1,6% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----|-----------|---------|------|--------|-------|
| 1 | 13.733.569 | 2.187.527 | 2.187.296 | 231 | 1.773.742 | 413.785 | 1,7 | 149,95 | 646,2 |
| 2 | 7.788.125 | 723.559 | 723.431 | 128 | 685.886 | 37.673 | 0,2 | 47,65 | 742,3 |
| 3 | 7.788.125 | 723.559 | 723.431 | 128 | 685.886 | 37.673 | 0,2 | 47,65 | 742,3 |
| 4 | 5.945.444 | 1.463.968 | 1.463.865 | 103 | 1.087.856 | 376.112 | 1,7 | 149,95 | 646,2 |
| 5 | 5.945.444 | 1.463.968 | 1.463.865 | 103 | 1.087.856 | 376.112 | 1,7 | 0,00 | 0,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|------|-------|------|-----------------------|
| 1 | | 15,9% | 100,0% | 0,0% | 12,9% | 3,0% | 2004 R./2004 Inc. |
| 2 | | 9,3% | 100,0% | 0,0% | 8,8% | 0,5% | 1980 R./2004 Inc. |
| 3 | | 9,3% | 100,0% | 0,0% | 8,8% | 0,5% | 1980 R./1980 Inc. |
| 4 | | 24,6% | 100,0% | 0,0% | 18,3% | 6,3% | 1980 Ext. R/2004 Inc. |
| 5 | | 24,6% | 100,0% | 0,0% | 18,3% | 6,3% | 1980 Ext./1980 Inc. |

1.9. Table 53D – lubricants, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 801,3 kg/m³ to 1.163,9 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 15 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|---------|
| 1 | 13.086.915 | 10.469.020 | 5.306.447 | 5.162.573 | 5.237.091 | 5.231.929 | 0,3 | 17,15 | 833,2 |
| 2 | 11.096.428 | 8.876.484 | 4.507.483 | 4.369.001 | 4.440.542 | 4.435.942 | 0,3 | 17,15 | 833,2 |
| 3 | 2.219.046 | 74.172 | 72.385 | 1.787 | 74.172 | 0 | 0,1 | 17,15 | 833,0 |
| 4 | 1.990.487 | 1.592.536 | 798.964 | 793.572 | 796.549 | 795.987 | 0,3 | -20,05 | 1.003,2 |
| 5 | 397.813 | 6.265 | 4.641 | 1.624 | 6.265 | 0 | 0,1 | -20,05 | 1.003,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 50,7% | 49,3% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 50,8% | 49,2% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 3,3% | 97,6% | 2,4% | 3,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,0% | 50,2% | 49,8% | 40,0% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 74,1% | 25,9% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|--------|---------|
| 1 | 4.452.607 | 3.562.441 | 1.782.813 | 1.779.628 | 1.781.678 | 1.780.763 | 0,3 | 9,50 | 1.026,2 |
| 2 | 2.462.339 | 1.970.124 | 983.849 | 986.275 | 985.129 | 984.995 | 0,3 | 9,50 | 1.026,2 |
| 3 | 492.186 | 2.456 | 760 | 1.696 | 2.456 | 0 | 0,1 | 9,50 | 1.026,0 |
| 4 | 1.990.268 | 1.592.317 | 798.964 | 793.353 | 796.549 | 795.768 | 0,3 | -20,05 | 1.003,2 |
| 5 | 397.813 | 6.265 | 4.641 | 1.624 | 6.265 | 0 | 0,1 | -20,05 | 1.003,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 50,0% | 50,0% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 49,9% | 50,1% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 0,5% | 30,9% | 69,1% | 0,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,0% | 50,2% | 49,8% | 40,0% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 74,1% | 25,9% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|-------|--------|
| 1 | 8.634.308 | 6.906.579 | 3.523.634 | 3.382.945 | 3.455.413 | 3.451.166 | 0,3 | 17,15 | 833,2 |
| 2 | 8.634.089 | 6.906.360 | 3.523.634 | 3.382.726 | 3.455.413 | 3.450.947 | 0,3 | 17,15 | 833,2 |
| 3 | 1.726.860 | 71.716 | 71.625 | 91 | 71.716 | 0 | 0,1 | 17,15 | 833,0 |
| 4 | 219 | 219 | 0 | 219 | 0 | 219 | 0,2 | 15,05 | 1163,8 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|--------|-------|--------|-------|--------|-----------------------|
| 1 | 80,0% | 51,0% | 49,0% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 51,0% | 49,0% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 4,2% | 99,9% | 0,1% | 4,2% | 0,0% | 1980 R./1980 Inc. |
| 4 | 100,0% | 0,0% | 100,0% | 0,0% | 100,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|---------|---------|--------|---------|------|------|--------|---------|
| 1 | 13.086.915 | 401.528 | 384.41 | 17.118 | 401.528 | 0 | 0,1 | 17,15 | 811,4 |
| 2 | 11.096.647 | 370.247 | 361.205 | 9.042 | 370.247 | 0 | 0,1 | 17,15 | 811,4 |
| 3 | 11.096.647 | 370.247 | 361.205 | 9.042 | 370.247 | 0 | 0,1 | 17,15 | 811,4 |
| 4 | 1.990.268 | 31.281 | 23.205 | 8.076 | 31.281 | 0 | 0,1 | -20,05 | 1.001,6 |
| 5 | 1.990.268 | 31.281 | 23.205 | 8.076 | 31.281 | 0 | 0,1 | -20,05 | 1.001,6 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,1% | 95,7% | 4,3% | 3,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,3% | 97,6% | 2,4% | 3,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,3% | 97,6% | 2,4% | 3,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,6% | 74,2% | 25,8% | 1,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 74,2% | 25,8% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|--------|---------|
| 1 | 4.452.607 | 43.667 | 27.025 | 16.642 | 43.667 | 0 | 0,1 | 9,50 | 1.014,3 |
| 2 | 2.462.339 | 12.386 | 3.82 | 8.566 | 12.386 | 0 | 0,1 | 9,50 | 1.014,3 |
| 3 | 2.462.339 | 12.386 | 3.82 | 8.566 | 12.386 | 0 | 0,1 | 9,50 | 1.014,3 |
| 4 | 1.990.268 | 31.281 | 23.205 | 8.076 | 31.281 | 0 | 0,1 | -20,05 | 1.001,6 |
| 5 | 1.990.268 | 31.281 | 23.205 | 8.076 | 31.281 | 0 | 0,1 | -20,05 | 1.001,6 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,0% | 61,9% | 38,1% | 1,0% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,5% | 30,8% | 69,2% | 0,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,5% | 30,8% | 69,2% | 0,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,6% | 74,2% | 25,8% | 1,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 74,2% | 25,8% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|-----|---------|------|------|-------|-------|
| 1 | 8.634.308 | 357.861 | 357.385 | 476 | 357.861 | 0 | 0,1 | 17,15 | 811,4 |
| 2 | 8.634.308 | 357.861 | 357.385 | 476 | 357.861 | 0 | 0,1 | 17,15 | 811,4 |
| 3 | 8.634.308 | 357.861 | 357.385 | 476 | 357.861 | 0 | 0,1 | 17,15 | 811,4 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|------|------|------|-----------------------|
| 1 | 4,1% | 99,9% | 0,1% | 4,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,1% | 99,9% | 0,1% | 4,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,1% | 99,9% | 0,1% | 4,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

1.10. Table 59A – crude oil, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 606,1 kg/m³ to 1.161,2 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 20 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 20.824.804 | 16.575.250 | 8.797.146 | 7.778.104 | 8.501.842 | 8.073.408 | 0,3 | 19,95 | 609,3 |
| 2 | 8.436.340 | 6.714.695 | 3.531.511 | 3.183.184 | 3.443.890 | 3.270.805 | 0,3 | 19,80 | 817,3 |
| 3 | 1.687.268 | 203.832 | 176.997 | 26.835 | 203.832 | 0 | 0,1 | 19,80 | 817,5 |
| 4 | 12.388.464 | 9.860.555 | 5.265.635 | 4.594.920 | 5.057.952 | 4.802.603 | 0,3 | 19,95 | 609,3 |
| 5 | 2.476.655 | 524.196 | 397.518 | 126.678 | 524.196 | 0 | 0,1 | 19,95 | 609,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 79,6% | 53,1% | 46,9% | 40,8% | 38,8% | 2004 R./2004 Inc. |
| 2 | | 79,6% | 52,6% | 47,4% | 40,8% | 38,8% | 1980 R./2004 Inc. |
| 3 | | 12,1% | 86,8% | 13,2% | 12,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 79,6% | 53,4% | 46,6% | 40,8% | 38,8% | 1980 Ext. R/2004 Inc. |
| 5 | | 21,2% | 75,8% | 24,2% | 21,2% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 7.289.450 | 5.875.396 | 2.806.967 | 3.068.429 | 2.828.792 | 3.046.604 | 0,3 | 19,95 | 609,3 |
| 2 | 2.384.180 | 1.914.159 | 933.666 | 980.493 | 939.938 | 974.221 | 0,3 | 19,80 | 817,3 |
| 3 | 476.836 | 26.83 | 5 | 26.825 | 26.83 | 0 | 0,1 | 19,80 | 817,5 |
| 4 | 4.905.270 | 3.961.237 | 1.873.301 | 2.087.936 | 1.888.854 | 2.072.383 | 0,3 | 19,95 | 609,3 |
| 5 | 981.056 | 126.68 | 8 | 126.672 | 126.68 | 0 | 0,1 | 19,95 | 609,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|--------|-------|-------|-----------------------|
| 1 | | 80,6% | 47,8% | 52,2% | 38,8% | 41,8% | 2004 R./2004 Inc. |
| 2 | | 80,3% | 48,8% | 51,2% | 39,4% | 40,9% | 1980 R./2004 Inc. |
| 3 | | 5,6% | 0,0% | 100,0% | 5,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 80,8% | 47,3% | 52,7% | 38,5% | 42,2% | 1980 Ext. R/2004 Inc. |
| 5 | | 12,9% | 0,0% | 100,0% | 12,9% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|-------|-------|
| 1 | 13.535.354 | 10.699.854 | 5.990.179 | 4.709.675 | 5.673.050 | 5.026.804 | 0,3 | 20,05 | 609,2 |
| 2 | 6.052.160 | 4.800.536 | 2.597.845 | 2.202.691 | 2.503.952 | 2.296.584 | 0,3 | 20,20 | 815,2 |
| 3 | 1.210.432 | 177.002 | 176.992 | 10 | 177.002 | 0 | 0,1 | 20,20 | 815,0 |
| 4 | 7.483.194 | 5.899.318 | 3.392.334 | 2.506.984 | 3.169.098 | 2.730.220 | 0,3 | 20,05 | 609,2 |
| 5 | 1.495.599 | 397.516 | 397.51 | 6 | 397.516 | 0 | 0,1 | 20,05 | 609,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|-------|-------|-------|-----------------------|
| 1 | | 79,1% | 56,0% | 44,0% | 41,9% | 37,1% | 2004 R./2004 Inc. |
| 2 | | 79,3% | 54,1% | 45,9% | 41,4% | 37,9% | 1980 R./2004 Inc. |
| 3 | | 14,6% | 100,0% | 0,0% | 14,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 78,8% | 57,5% | 42,5% | 42,3% | 36,5% | 1980 Ext. R/2004 Inc. |
| 5 | | 26,6% | 100,0% | 0,0% | 26,6% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|---------|-----------|------|------|-------|-------|
| 1 | 20.824.804 | 3.640.484 | 2.872.698 | 767.786 | 3.640.484 | 0 | 0,1 | 19,95 | 609,1 |
| 2 | 8.436.316 | 1.017.599 | 883.616 | 133.983 | 1.017.599 | 0 | 0,1 | 19,80 | 815,2 |
| 3 | 8.436.316 | 1.017.599 | 883.616 | 133.983 | 1.017.599 | 0 | 0,1 | 19,80 | 815,2 |
| 4 | 12.388.488 | 2.622.885 | 1.989.082 | 633.803 | 2.622.885 | 0 | 0,1 | 19,95 | 609,1 |
| 5 | 12.388.488 | 2.622.885 | 1.989.082 | 633.803 | 2.622.885 | 0 | 0,1 | 19,95 | 609,1 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|------|-----------------------|
| 1 | | 17,5% | 78,9% | 21,1% | 17,5% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 12,1% | 86,8% | 13,2% | 12,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 12,1% | 86,8% | 13,2% | 12,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 21,2% | 75,8% | 24,2% | 21,2% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 21,2% | 75,8% | 24,2% | 21,2% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|---------|------|------|-------|-------|
| 1 | 7.289.450 | 767.791 | 59 | 767.732 | 767.791 | 0 | 0,1 | 19,95 | 609,1 |
| 2 | 2.384.189 | 133.983 | 31 | 133.952 | 133.983 | 0 | 0,1 | 19,80 | 815,2 |
| 3 | 2.384.189 | 133.983 | 31 | 133.952 | 133.983 | 0 | 0,1 | 19,80 | 815,2 |
| 4 | 4.905.261 | 633.808 | 28 | 633.78 | 633.808 | 0 | 0,1 | 19,95 | 609,1 |
| 5 | 4.905.261 | 633.808 | 28 | 633.78 | 633.808 | 0 | 0,1 | 19,95 | 609,1 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|------|--------|-------|------|-----------------------|
| 1 | | 10,5% | 0,0% | 100,0% | 10,5% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 5,6% | 0,0% | 100,0% | 5,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 5,6% | 0,0% | 100,0% | 5,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 12,9% | 0,0% | 100,0% | 12,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 12,9% | 0,0% | 100,0% | 12,9% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----|-----------|------|------|-------|-------|
| 1 | 13.535.354 | 2.872.693 | 2.872.639 | 54 | 2.872.693 | 0 | 0,1 | 20,05 | 609,0 |
| 2 | 6.052.127 | 883.616 | 883.585 | 31 | 883.616 | 0 | 0,1 | 20,20 | 814,9 |
| 3 | 6.052.127 | 883.616 | 883.585 | 31 | 883.616 | 0 | 0,1 | 20,20 | 814,9 |
| 4 | 7.483.227 | 1.989.077 | 1.989.054 | 23 | 1.989.077 | 0 | 0,1 | 20,05 | 609,0 |
| 5 | 7.483.227 | 1.989.077 | 1.989.054 | 23 | 1.989.077 | 0 | 0,1 | 20,05 | 609,0 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|------|-------|------|-----------------------|
| 1 | | 21,2% | 100,0% | 0,0% | 21,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 14,6% | 100,0% | 0,0% | 14,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 14,6% | 100,0% | 0,0% | 14,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 26,6% | 100,0% | 0,0% | 26,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 26,6% | 100,0% | 0,0% | 26,6% | 0,0% | 1980 Ext./1980 Inc. |

1.11. Table 59B – products, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 606,1 kg/m³ to 1.160,6 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 20 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 20.595.894 | 16.487.819 | 8.733.555 | 7.754.264 | 8.239.166 | 8.248.653 | 1,0 | -50,00 | 827,8 |
| 2 | 10.582.645 | 8.444.798 | 4.354.838 | 4.089.960 | 4.253.529 | 4.191.269 | 0,5 | -10,55 | 795,3 |
| 3 | 2.116.529 | 167.176 | 135.282 | 31.894 | 159.724 | 7.452 | 0,2 | -2,40 | 786,5 |
| 4 | 10.013.249 | 8.043.021 | 4.378.717 | 3.664.304 | 3.985.637 | 4.057.384 | 1,0 | -50,00 | 827,8 |
| 5 | 2.001.888 | 329.774 | 280.837 | 48.937 | 247.701 | 82.073 | 0,8 | 149,65 | 670,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,1% | 53,0% | 47,0% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 79,8% | 51,6% | 48,4% | 40,2% | 39,6% | 1980 R./2004 Inc. |
| 3 | 7,9% | 80,9% | 19,1% | 7,5% | 0,4% | 1980 R./1980 Inc. |
| 4 | 80,3% | 54,4% | 45,6% | 39,8% | 40,5% | 1980 Ext. R/2004 Inc. |
| 5 | 16,5% | 85,2% | 14,8% | 12,4% | 4,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 7.280.783 | 5.851.143 | 2.845.207 | 3.005.936 | 2.854.875 | 2.996.268 | 1,0 | -50,00 | 827,8 |
| 2 | 3.211.000 | 2.576.953 | 1.259.701 | 1.317.252 | 1.267.683 | 1.309.270 | 0,5 | -10,55 | 795,3 |
| 3 | 642,2 | 31.903 | 29 | 31.874 | 28.926 | 2.977 | 0,2 | -2,40 | 786,5 |
| 4 | 4.069.783 | 3.274.190 | 1.585.506 | 1.688.684 | 1.587.192 | 1.686.998 | 1,0 | -50,00 | 827,8 |
| 5 | 814.236 | 48.086 | 578 | 47.508 | 34.375 | 13.711 | 0,6 | -50,00 | 828,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,4% | 48,6% | 51,4% | 39,2% | 41,2% | 2004 R./2004 Inc. |
| 2 | 80,3% | 48,9% | 51,1% | 39,5% | 40,8% | 1980 R./2004 Inc. |
| 3 | 5,0% | 0,1% | 99,9% | 4,5% | 0,5% | 1980 R./1980 Inc. |
| 4 | 80,5% | 48,4% | 51,6% | 39,0% | 41,5% | 1980 Ext. R/2004 Inc. |
| 5 | 5,9% | 1,2% | 98,8% | 4,2% | 1,7% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 13.315.111 | 10.636.676 | 5.888.348 | 4.748.328 | 5.384.291 | 5.252.385 | 0,9 | 149,65 | 670,7 |
| 2 | 7.371.645 | 5.867.845 | 3.095.137 | 2.772.708 | 2.985.846 | 2.881.999 | 0,3 | 20,30 | 773,7 |
| 3 | 1.474.329 | 135.273 | 135.253 | 20 | 130.798 | 4.475 | 0,2 | 50,10 | 740,0 |
| 4 | 5.943.466 | 4.768.831 | 2.793.211 | 1.975.620 | 2.398.445 | 2.370.386 | 0,9 | 149,65 | 670,7 |
| 5 | 1.187.652 | 281.688 | 280.259 | 1.429 | 213.326 | 68.362 | 0,8 | 149,65 | 670,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|-------|-------|-------|-----------------------|
| 1 | 79,9% | 55,4% | 44,6% | 40,4% | 39,4% | 2004 R./2004 Inc. |
| 2 | 79,6% | 52,7% | 47,3% | 40,5% | 39,1% | 1980 R./2004 Inc. |
| 3 | 9,2% | 100,0% | 0,0% | 8,9% | 0,3% | 1980 R./1980 Inc. |
| 4 | 80,2% | 58,6% | 41,4% | 40,4% | 39,9% | 1980 Ext. R/2004 Inc. |
| 5 | 23,7% | 99,5% | 0,5% | 18,0% | 5,8% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|---------|-----------|---------|------|--------|-------|
| 1 | 20.595.894 | 2.485.134 | 2.081.871 | 403.263 | 2.037.704 | 447.43 | 0,8 | 149,40 | 670,7 |
| 2 | 10.574.012 | 836.274 | 676.659 | 159.615 | 799.239 | 37.035 | 0,2 | -2,00 | 785,9 |
| 3 | 10.574.012 | 836.274 | 676.659 | 159.615 | 799.239 | 37.035 | 0,2 | -2,00 | 785,9 |
| 4 | 10.021.882 | 1.648.860 | 1.405.212 | 243.648 | 1.238.465 | 410.395 | 0,8 | 149,40 | 670,7 |
| 5 | 10.021.882 | 1.648.860 | 1.405.212 | 243.648 | 1.238.465 | 410.395 | 0,8 | 149,40 | 670,7 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 12,1% | 83,8% | 16,2% | 9,9% | 2,2% | 2004 R./2004 Inc. |
| 2 | 7,9% | 80,9% | 19,1% | 7,6% | 0,4% | 1980 R./2004 Inc. |
| 3 | 7,9% | 80,9% | 19,1% | 7,6% | 0,4% | 1980 R./1980 Inc. |
| 4 | 16,5% | 85,2% | 14,8% | 12,4% | 4,1% | 1980 Ext. R/2004 Inc. |
| 5 | 16,5% | 85,2% | 14,8% | 12,4% | 4,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-------|---------|---------|--------|------|--------|-------|
| 1 | 7.280.783 | 398.902 | 2.909 | 395.993 | 315.659 | 83.243 | 0,6 | -49,40 | 826,7 |
| 2 | 3.207.960 | 159.659 | 126 | 159.533 | 144.934 | 14.725 | 0,2 | -2,00 | 785,9 |
| 3 | 3.207.960 | 159.659 | 126 | 159.533 | 144.934 | 14.725 | 0,2 | -2,00 | 785,9 |
| 4 | 4.072.823 | 239.243 | 2.783 | 236.46 | 170.725 | 68.518 | 0,6 | -49,40 | 826,7 |
| 5 | 4.072.823 | 239.243 | 2.783 | 236.46 | 170.725 | 68.518 | 0,6 | -49,40 | 826,7 |

| C | P | PG | PL | P1 | PX | |
|---|------|------|-------|------|------|-----------------------|
| 1 | 5,5% | 0,7% | 99,3% | 4,3% | 1,1% | 2004 R./2004 Inc. |
| 2 | 5,0% | 0,1% | 99,9% | 4,5% | 0,5% | 1980 R./2004 Inc. |
| 3 | 5,0% | 0,1% | 99,9% | 4,5% | 0,5% | 1980 R./1980 Inc. |
| 4 | 5,9% | 1,2% | 98,8% | 4,2% | 1,7% | 1980 Ext. R/2004 Inc. |
| 5 | 5,9% | 1,2% | 98,8% | 4,2% | 1,7% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|---------|------|--------|-------|-----------|
| 1 | 13.315.111 | 2.086.232 | 2.078.962 | 1.722.045 | 364.187 | 0,8 | 149,40 | 670,7 | 1.722.045 |
| 2 | 7.366.052 | 676.615 | 676.533 | 654.305 | 22.31 | 0,2 | 50,10 | 740,0 | 654.305 |
| 3 | 7.366.052 | 676.615 | 676.533 | 654.305 | 22.31 | 0,2 | 50,10 | 740,0 | 654.305 |
| 4 | 5.949.059 | 1.409.617 | 1.402.429 | 1.067.740 | 341.877 | 0,8 | 149,40 | 670,7 | 1.067.740 |
| 5 | 5.949.059 | 1.409.617 | 1.402.429 | 1.067.740 | 341.877 | 0,8 | 149,65 | 670,5 | 1.067.740 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 15,7% | 99,7% | 0,3% | 12,9% | 2,7% | 2004 R./2004 Inc. |
| 2 | 9,2% | 100,0% | 0,0% | 8,9% | 0,3% | 1980 R./2004 Inc. |
| 3 | 9,2% | 100,0% | 0,0% | 8,9% | 0,3% | 1980 R./1980 Inc. |
| 4 | 23,7% | 99,5% | 0,5% | 17,9% | 5,7% | 1980 Ext. R/2004 Inc. |
| 5 | 23,7% | 99,5% | 0,5% | 17,9% | 5,7% | 1980 Ext./1980 Inc. |

1.12. Table 59D – lubricants, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Observed density: 798,1 kg/m³ to 1.160,7 kg/m³, increment 0,1 kg/m³

Quantity compared: Base density / kg/m³ @ 20 °C

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 with standard rounding:

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 13.128.559 | 10.502.816 | 5.321.390 | 5.181.426 | 5.253.901 | 5.248.915 | 0,3 | 21,35 | 806,3 |
| 2 | 11.157.282 | 8.925.925 | 4.533.435 | 4.392.490 | 4.465.174 | 4.460.751 | 0,3 | 21,35 | 806,3 |
| 3 | 2.230.456 | 74.91 | 71.672 | 3.238 | 74.91 | 0 | 0,1 | 21,35 | 806,5 |
| 4 | 1.971.277 | 1.576.891 | 787.955 | 788.936 | 788.727 | 788.164 | 0,3 | -20,15 | 980,2 |
| 5 | 394.213 | 6.005 | 2.621 | 3.384 | 6.005 | 0 | 0,1 | -20,15 | 980,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,0% | 50,7% | 49,3% | 40,0% | 40,0% | 2004 R./2004 Inc. |
| 2 | 80,0% | 50,8% | 49,2% | 40,0% | 40,0% | 1980 R./2004 Inc. |
| 3 | 3,4% | 95,7% | 4,3% | 3,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 80,0% | 50,0% | 50,0% | 40,0% | 40,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,5% | 43,6% | 56,4% | 1,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|------|--------|-------|
| 1 | 4.772.064 | 3.817.447 | 1.906.619 | 1.910.828 | 1.909.165 | 1.908.282 | 0,3 | 14,35 | 839,8 |
| 2 | 2.800.996 | 2.240.765 | 1.118.664 | 1.122.101 | 1.120.438 | 1.120.327 | 0,3 | 14,35 | 839,8 |
| 3 | 560.198 | 3.784 | 793 | 2.991 | 3.784 | 0 | 0,1 | 14,35 | 840,0 |
| 4 | 1.971.068 | 1.576.682 | 787.955 | 788.727 | 788.727 | 787.955 | 0,3 | -20,15 | 980,2 |
| 5 | 394.213 | 6.005 | 2.621 | 3.384 | 6.005 | 0 | 0,1 | -20,15 | 980,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 10,5% | 0,0% | 100,0% | 10,5% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,6% | 0,0% | 100,0% | 5,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 5,6% | 0,0% | 100,0% | 5,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 12,9% | 0,0% | 100,0% | 12,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 12,9% | 0,0% | 100,0% | 12,9% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----|-----------|------|------|-------|-------|
| 1 | 13.535.354 | 2.872.693 | 2.872.639 | 54 | 2.872.693 | 0 | 0,1 | 20,05 | 609,0 |
| 2 | 6.052.127 | 883.616 | 883.585 | 31 | 883.616 | 0 | 0,1 | 20,20 | 814,9 |
| 3 | 6.052.127 | 883.616 | 883.585 | 31 | 883.616 | 0 | 0,1 | 20,20 | 814,9 |
| 4 | 7.483.227 | 1.989.077 | 1.989.054 | 23 | 1.989.077 | 0 | 0,1 | 20,05 | 609,0 |
| 5 | 7.483.227 | 1.989.077 | 1.989.054 | 23 | 1.989.077 | 0 | 0,1 | 20,05 | 609,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 21,2% | 100,0% | 0,0% | 21,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | 14,6% | 100,0% | 0,0% | 14,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 14,6% | 100,0% | 0,0% | 14,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 26,6% | 100,0% | 0,0% | 26,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 26,6% | 100,0% | 0,0% | 26,6% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data):

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|---------|---------|--------|---------|------|------|--------|-------|
| 1 | 13.128.559 | 404.979 | 371.946 | 33.033 | 404.979 | 0 | 0,1 | 21,35 | 798,1 |
| 2 | 11.157.491 | 374.956 | 358.716 | 16.24 | 374.956 | 0 | 0,1 | 21,35 | 798,1 |
| 3 | 11.157.491 | 374.956 | 358.716 | 16.24 | 374.956 | 0 | 0,1 | 21,35 | 798,1 |
| 4 | 1.971.068 | 30.023 | 13.23 | 16.793 | 30.023 | 0 | 0,1 | -20,15 | 976,8 |
| 5 | 1.971.068 | 30.023 | 13.23 | 16.793 | 30.023 | 0 | 0,1 | -20,15 | 976,8 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,1% | 91,8% | 8,2% | 3,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,4% | 95,7% | 4,3% | 3,4% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,4% | 95,7% | 4,3% | 3,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,5% | 44,1% | 55,9% | 1,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,5% | 44,1% | 55,9% | 1,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|------|--------|-------|
| 1 | 4.772.064 | 48.96 | 17.255 | 31.705 | 48.96 | 0 | 0,1 | 14,35 | 823,6 |
| 2 | 2.800.996 | 18.937 | 4.025 | 14.912 | 18.937 | 0 | 0,1 | 14,35 | 823,6 |
| 3 | 2.800.996 | 18.937 | 4.025 | 14.912 | 18.937 | 0 | 0,1 | 14,35 | 823,6 |
| 4 | 1.971.068 | 30.023 | 13.23 | 16.793 | 30.023 | 0 | 0,1 | -20,15 | 976,8 |
| 5 | 1.971.068 | 30.023 | 13.23 | 16.793 | 30.023 | 0 | 0,1 | -20,15 | 976,8 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,0% | 35,2% | 64,8% | 1,0% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,7% | 21,3% | 78,7% | 0,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,7% | 21,3% | 78,7% | 0,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,5% | 44,1% | 55,9% | 1,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,5% | 44,1% | 55,9% | 1,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|------|------|-------|-------|---------|
| 1 | 8.356.495 | 356.019 | 354.691 | 356.019 | 0 | 0,1 | 21,35 | 798,1 | 356.019 |
| 2 | 8.356.495 | 356.019 | 354.691 | 356.019 | 0 | 0,1 | 21,35 | 798,1 | 356.019 |
| 3 | 8.356.495 | 356.019 | 354.691 | 356.019 | 0 | 0,1 | 21,35 | 798,1 | 356.019 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,00 | 0,0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0,0 | 0,00 | 0,0 | 0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|------|------|------|-----------------------|
| 1 | 4,3% | 99,6% | 0,4% | 4,3% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,3% | 99,6% | 0,4% | 4,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,3% | 99,6% | 0,4% | 4,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

1.13. Table 6A – crude oil, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base density @ 60 °F: -10 °API to 100 °API, increment 0,1 °API

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|-----------|-----------|-----------|---------|------|-------|
| 1 | 3.963.600 | 3.334.064 | 672.336 | 2.661.728 | 1.145.810 | 2.188.254 | 0,00007 | -7,1 | 99,5 |
| 2 | 1.278.051 | 959.053 | 158.655 | 800.398 | 525.676 | 433.377 | 0,00006 | 32,6 | 54,8 |
| 3 | 1.278.051 | 959.053 | 158.655 | 800.398 | 525.676 | 433.377 | 0,00006 | 32,6 | 54,8 |
| 4 | 2.685.549 | 2.375.011 | 513.681 | 1.861.330 | 620.134 | 1.754.877 | 0,00007 | -7,1 | 99,5 |
| 5 | 2.685.549 | 2.375.011 | 513.681 | 1.861.330 | 620.134 | 1.754.877 | 0,00007 | -7,1 | 99,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 84,1% | 20,2% | 79,8% | 28,9% | 55,2% | 2004 R./2004 Inc. |
| 2 | 75,0% | 16,5% | 83,5% | 41,1% | 33,9% | 1980 R./2004 Inc. |
| 3 | 75,0% | 16,5% | 83,5% | 41,1% | 33,9% | 1980 R./1980 Inc. |
| 4 | 88,4% | 21,6% | 78,4% | 23,1% | 65,3% | 1980 Ext. R/2004 Inc. |
| 5 | 88,4% | 21,6% | 78,4% | 23,1% | 65,3% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|---------|---------|---------|---------|------|-------|
| 1 | 1.299.180 | 1.169.148 | 672.336 | 496.812 | 259.438 | 909.71 | 0,00007 | -7,1 | 99,5 |
| 2 | 330.6 | 297.457 | 158.655 | 138.802 | 65.959 | 231.498 | 0,00006 | 32,6 | 54,8 |
| 3 | 330.6 | 297.457 | 158.655 | 138.802 | 65.959 | 231.498 | 0,00006 | 32,6 | 54,8 |
| 4 | 968.58 | 871.691 | 513.681 | 358.01 | 193.479 | 678.212 | 0,00007 | -7,1 | 99,5 |
| 5 | 968.58 | 871.691 | 513.681 | 358.01 | 193.479 | 678.212 | 0,00007 | -7,1 | 99,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 57,5% | 42,5% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 53,3% | 46,7% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 53,3% | 46,7% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 58,9% | 41,1% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 58,9% | 41,1% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----|-----------|---------|-----------|---------|-------|-------|
| 1 | 2.664.420 | 2.164.916 | 0 | 2.164.916 | 886.372 | 1.278.544 | 0,00007 | 280,8 | 96,9 |
| 2 | 947.451 | 661.596 | 0 | 661.596 | 459.717 | 201.879 | 0,00004 | 228,9 | 38,8 |
| 3 | 947.451 | 661.596 | 0 | 661.596 | 459.717 | 201.879 | 0,00004 | 228,9 | 38,8 |
| 4 | 1.716.969 | 1.503.320 | 0 | 1.503.320 | 426.655 | 1.076.665 | 0,00007 | 280,8 | 96,9 |
| 5 | 1.716.969 | 1.503.320 | 0 | 1.503.320 | 426.655 | 1.076.665 | 0,00007 | 280,8 | 96,9 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 81,3% | 0,0% | 100,0% | 33,3% | 48,0% | 2004 R./2004 Inc. |
| 2 | 69,8% | 0,0% | 100,0% | 48,5% | 21,3% | 1980 R./2004 Inc. |
| 3 | 69,8% | 0,0% | 100,0% | 48,5% | 21,3% | 1980 R./1980 Inc. |
| 4 | 87,6% | 0,0% | 100,0% | 24,8% | 62,7% | 1980 Ext. R/2004 Inc. |
| 5 | 87,6% | 0,0% | 100,0% | 24,8% | 62,7% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|---------|---------|------|--------|------|-------|
| 1 | 3.963.600 | 506.475 | 87.913 | 418.562 | 506.475 | 0 | 0,0001 | 59,8 | 78,1 |
| 2 | 1.278.051 | 84.445 | 9.876 | 74.569 | 84.445 | 0 | 0,0001 | 59,2 | 3,8 |
| 3 | 1.278.051 | 84.445 | 9.876 | 74.569 | 84.445 | 0 | 0,0001 | 59,2 | 3,8 |
| 4 | 2.685.549 | 422.03 | 78.037 | 343.993 | 422.03 | 0 | 0,0001 | 59,8 | 78,1 |
| 5 | 2.685.549 | 422.03 | 78.037 | 343.993 | 422.03 | 0 | 0,0001 | 59,8 | 78,1 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 12,8% | 17,4% | 82,6% | 12,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 6,6% | 11,7% | 88,3% | 6,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 6,6% | 11,7% | 88,3% | 6,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 15,7% | 18,5% | 81,5% | 15,7% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 15,7% | 18,5% | 81,5% | 15,7% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|------|--------|------|------|--------|
| 1 | 1.299.180 | 87.913 | 87.913 | 87.913 | 0 | 0,0001 | 59,8 | 78,1 | 87.913 |
| 2 | 330.6 | 9.876 | 9.876 | 9.876 | 0 | 0,0001 | 59,2 | 3,8 | 9.876 |
| 3 | 330.6 | 9.876 | 9.876 | 9.876 | 0 | 0,0001 | 59,2 | 3,8 | 9.876 |
| 4 | 968.58 | 78.037 | 78.037 | 78.037 | 0 | 0,0001 | 59,8 | 78,1 | 78.037 |
| 5 | 968.58 | 78.037 | 78.037 | 78.037 | 0 | 0,0001 | 59,8 | 78,1 | 78.037 |

| C | P | PG | PL | P1 | PX | |
|---|------|--------|------|------|------|-----------------------|
| 1 | 6,8% | 100,0% | 0,0% | 6,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,0% | 100,0% | 0,0% | 3,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,0% | 100,0% | 0,0% | 3,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 8,1% | 100,0% | 0,0% | 8,1% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 8,1% | 100,0% | 0,0% | 8,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|---------|------|--------|------|-------|
| 1 | 2.664.420 | 418.562 | 0 | 418.562 | 418.562 | 0 | 0,0001 | 79,3 | 98,7 |
| 2 | 947.451 | 74.569 | 0 | 74.569 | 74.569 | 0 | 0,0001 | 88,9 | 54,5 |
| 3 | 947.451 | 74.569 | 0 | 74.569 | 74.569 | 0 | 0,0001 | 88,9 | 54,5 |
| 4 | 1.716.969 | 343.993 | 0 | 343.993 | 343.993 | 0 | 0,0001 | 79,3 | 98,7 |
| 5 | 1.716.969 | 343.993 | 0 | 343.993 | 343.993 | 0 | 0,0001 | 79,3 | 98,7 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 15,7% | 0,0% | 100,0% | 15,7% | 0,0% | 2004 R./2004 Inc. |
| 2 | 7,9% | 0,0% | 100,0% | 7,9% | 0,0% | 1980 R./2004 Inc. |
| 3 | 7,9% | 0,0% | 100,0% | 7,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 20,0% | 0,0% | 100,0% | 20,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 20,0% | 0,0% | 100,0% | 20,0% | 0,0% | 1980 Ext./1980 Inc. |

1.14. Table 6B – products, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base density @ 60 °F: -10 °API to 100 °API, increment 0,1 °API

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF -5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|-----------|-----------|-----------|---------|------|-------|
| 1 | 3.963.600 | 3.387.286 | 677.763 | 2.709.523 | 1.111.483 | 2.275.803 | 0,00007 | -4,9 | 91,4 |
| 2 | 1.728.351 | 1.335.704 | 249.394 | 1.086.310 | 700.666 | 635.038 | 0,00006 | 37,1 | 84,8 |
| 3 | 1.728.351 | 1.335.704 | 249.394 | 1.086.310 | 700.666 | 635.038 | 0,00006 | 37,1 | 84,8 |
| 4 | 2.235.249 | 2.051.582 | 428.369 | 1.623.213 | 410.817 | 1.640.765 | 0,00007 | -4,9 | 91,4 |
| 5 | 2.235.249 | 2.051.582 | 428.369 | 1.623.213 | 410.817 | 1.640.765 | 0,00007 | -4,9 | 91,4 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 85,5% | 20,0% | 80,0% | 28,0% | 57,4% | 2004 R./2004 Inc. |
| 2 | 77,3% | 18,7% | 81,3% | 40,5% | 36,7% | 1980 R./2004 Inc. |
| 3 | 77,3% | 18,7% | 81,3% | 40,5% | 36,7% | 1980 R./1980 Inc. |
| 4 | 91,8% | 20,9% | 79,1% | 18,4% | 73,4% | 1980 Ext. R/2004 Inc. |
| 5 | 91,8% | 20,9% | 79,1% | 18,4% | 73,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|---------|---------|---------|---------|------|-------|
| 1 | 1.299.180 | 1.169.029 | 677.763 | 491.266 | 259.266 | 909.763 | 0,00007 | -4,9 | 91,4 |
| 2 | 510.6 | 459.484 | 249.394 | 210.09 | 101.762 | 357.722 | 0,00006 | 37,1 | 84,8 |
| 3 | 510.6 | 459.484 | 249.394 | 210.09 | 101.762 | 357.722 | 0,00006 | 37,1 | 84,8 |
| 4 | 788.58 | 709.545 | 428.369 | 281.176 | 157.504 | 552.041 | 0,00007 | -4,9 | 91,4 |
| 5 | 788.58 | 709.545 | 428.369 | 281.176 | 157.504 | 552.041 | 0,00007 | -4,9 | 91,4 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 58,0% | 42,0% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 54,3% | 45,7% | 19,9% | 70,1% | 1980 R./2004 Inc. |
| 3 | 90,0% | 54,3% | 45,7% | 19,9% | 70,1% | 1980 R./1980 Inc. |
| 4 | 90,0% | 60,4% | 39,6% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 60,4% | 39,6% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----|-----------|---------|-----------|---------|-------|-------|
| 1 | 2.664.420 | 2.218.257 | 0 | 2.218.257 | 852.217 | 1.366.040 | 0,00007 | 278,3 | 95,2 |
| 2 | 1.217.751 | 876.22 | 0 | 876.22 | 598.904 | 277.316 | 0,00004 | 236,7 | 37,6 |
| 3 | 1.217.751 | 876.22 | 0 | 876.22 | 598.904 | 277.316 | 0,00004 | 236,7 | 37,6 |
| 4 | 1.446.669 | 1.342.037 | 0 | 1.342.037 | 253.313 | 1.088.724 | 0,00007 | 278,3 | 95,2 |
| 5 | 1.446.669 | 1.342.037 | 0 | 1.342.037 | 253.313 | 1.088.724 | 0,00007 | 278,3 | 95,2 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| | 83,3% | 0,0% | 100,0% | 32,0% | 51,3% | 2004 R./2004 Inc. |
| | 72,0% | 0,0% | 100,0% | 49,2% | 22,8% | 1980 R./2004 Inc. |
| | 72,0% | 0,0% | 100,0% | 49,2% | 22,8% | 1980 R./1980 Inc. |
| | 92,8% | 0,0% | 100,0% | 17,5% | 75,3% | 1980 Ext. R/2004 Inc. |
| | 92,8% | 0,0% | 100,0% | 17,5% | 75,3% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|---------|---------|------|--------|------|-------|
| 1 | 3.963.600 | 544.256 | 93.318 | 450.938 | 544.256 | 0 | 0,0001 | 59,6 | 93,4 |
| 2 | 1.728.351 | 121.121 | 19.546 | 101.575 | 121.121 | 0 | 0,0001 | 59,3 | 52,4 |
| 3 | 1.728.351 | 121.121 | 19.546 | 101.575 | 121.121 | 0 | 0,0001 | 59,3 | 52,4 |
| 4 | 2.235.249 | 423.135 | 73.772 | 349.363 | 423.135 | 0 | 0,0001 | 59,6 | 93,4 |
| 5 | 2.235.249 | 423.135 | 73.772 | 349.363 | 423.135 | 0 | 0,0001 | 59,6 | 93,4 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|------|-----------------------|
| 1 | | 13,7% | 17,1% | 82,9% | 13,7% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 7,0% | 16,1% | 83,9% | 7,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 7,0% | 16,1% | 83,9% | 7,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 18,9% | 17,4% | 82,6% | 18,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 18,9% | 17,4% | 82,6% | 18,9% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|-----|--------|------|--------|------|-------|
| 1 | 1.299.180 | 93.318 | 93.318 | 0 | 93.318 | 0 | 0,0001 | 59,6 | 93,4 |
| 2 | 510.6 | 19.546 | 19.546 | 0 | 19.546 | 0 | 0,0001 | 59,3 | 52,4 |
| 3 | 510.6 | 19.546 | 19.546 | 0 | 19.546 | 0 | 0,0001 | 59,3 | 52,4 |
| 4 | 788.58 | 73.772 | 73.772 | 0 | 73.772 | 0 | 0,0001 | 59,6 | 93,4 |
| 5 | 788.58 | 73.772 | 73.772 | 0 | 73.772 | 0 | 0,0001 | 59,6 | 93,4 |

| C | | P | PG | PL | P1 | PX | |
|---|--|------|--------|------|------|------|-----------------------|
| 1 | | 7,2% | 100,0% | 0,0% | 7,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 3,8% | 100,0% | 0,0% | 3,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 3,8% | 100,0% | 0,0% | 3,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 9,4% | 100,0% | 0,0% | 9,4% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 9,4% | 100,0% | 0,0% | 9,4% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|---------|------|--------|------|-------|
| 1 | 2.664.420 | 450.938 | 0 | 450.938 | 450.938 | 0 | 0,0001 | 79,4 | 91,6 |
| 2 | 1.217.751 | 101.575 | 0 | 101.575 | 101.575 | 0 | 0,0001 | 81,2 | 78,4 |
| 3 | 1.217.751 | 101.575 | 0 | 101.575 | 101.575 | 0 | 0,0001 | 81,2 | 78,4 |
| 4 | 1.446.669 | 349.363 | 0 | 349.363 | 349.363 | 0 | 0,0001 | 79,4 | 91,6 |
| 5 | 1.446.669 | 349.363 | 0 | 349.363 | 349.363 | 0 | 0,0001 | 79,4 | 91,6 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|------|--------|-------|------|-----------------------|
| 1 | | 16,9% | 0,0% | 100,0% | 16,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 8,3% | 0,0% | 100,0% | 8,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 8,3% | 0,0% | 100,0% | 8,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 24,1% | 0,0% | 100,0% | 24,1% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 24,1% | 0,0% | 100,0% | 24,1% | 0,0% | 1980 Ext./1980 Inc. |

1.15. Table 6C – special applications, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Thermal expansion coefficient @ 60 °F: 0,0002300 1 / °F to 0,0009300 1 / °F, increment 0,0000001

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

TTLCB: Thermal expansion coefficient for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|-------|-----------|
| 1 | 25.203.600 | 20.210.183 | 6.121.479 | 14.088.704 | 6.055.477 | 14.154.706 | 0,00011 | 283,5 | 0,0009297 |
| 2 | 12.416.103 | 8.983.323 | 2.746.734 | 6.236.589 | 3.569.434 | 5.413.889 | 0,00007 | 23,8 | 0,0008892 |
| 3 | 2.483.821 | 1.948.325 | 391.504 | 1.556.821 | 1.012.810 | 935.515 | 0,00006 | 37,9 | 0,0009130 |
| 4 | 12.787.497 | 11.226.860 | 3.374.745 | 7.852.115 | 2.486.043 | 8.740.817 | 0,00011 | 283,5 | 0,0009297 |
| 5 | 2.559.779 | 2.413.878 | 479.221 | 1.934.657 | 339.225 | 2.074.653 | 0,00007 | -12,6 | 0,0009140 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,2% | 30,3% | 69,7% | 24,0% | 56,2% | 2004 R./2004 Inc. |
| 2 | 72,4% | 30,6% | 69,4% | 28,7% | 43,6% | 1980 R./2004 Inc. |
| 3 | 78,4% | 20,1% | 79,9% | 40,8% | 37,7% | 1980 R./1980 Inc. |
| 4 | 87,8% | 30,1% | 69,9% | 19,4% | 68,4% | 1980 Ext. R/2004 Inc. |
| 5 | 94,3% | 19,9% | 80,1% | 13,3% | 81,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|-------|-----------|
| 1 | 8.261.180 | 7.436.238 | 4.350.481 | 3.085.757 | 1.647.720 | 5.788.518 | 0,00009 | -32,0 | 0,0009242 |
| 2 | 3.961.800 | 3.566.764 | 1.957.011 | 1.609.753 | 791.538 | 2.775.226 | 0,00007 | 23,8 | 0,0008892 |
| 3 | 792.6 | 713.542 | 391.504 | 322.038 | 158.088 | 555.454 | 0,00006 | 37,9 | 0,0009130 |
| 4 | 4.299.380 | 3.869.474 | 2.393.470 | 1.476.004 | 856.182 | 3.013.292 | 0,00009 | -32,0 | 0,0009242 |
| 5 | 860.58 | 774.441 | 479.221 | 295.22 | 171.806 | 602.635 | 0,00007 | -12,6 | 0,0009140 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 58,5% | 41,5% | 19,9% | 70,1% | 2004 R./2004 Inc. |
| 2 | 90,0% | 54,9% | 45,1% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 54,9% | 45,1% | 19,9% | 70,1% | 1980 R./1980 Inc. |
| 4 | 90,0% | 61,9% | 38,1% | 19,9% | 70,1% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 61,9% | 38,1% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|------------|-----------|------------|-----------|-----------|---------|-------|-----------|
| 1 | 16.942.420 | 12.773.945 | 1.770.998 | 11.002.947 | 4.407.757 | 8.366.188 | 0,00011 | 283,5 | 0,0009297 |
| 2 | 8.454.303 | 5.416.559 | 789.723 | 4.626.836 | 2.777.896 | 2.638.663 | 0,00007 | 235,1 | 0,0005097 |
| 3 | 1.691.221 | 1.234.783 | 0 | 1.234.783 | 854.722 | 380.061 | 0,00003 | 136,6 | 0,0009275 |
| 4 | 8.488.117 | 7.357.386 | 981.275 | 6.376.111 | 1.629.861 | 5.727.525 | 0,00011 | 283,5 | 0,0009297 |
| 5 | 1.699.199 | 1.639.437 | 0 | 1.639.437 | 167.419 | 1.472.018 | 0,00006 | 263,5 | 0,0009280 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|--------|-------|-------|-----------------------|
| 1 | 75,4% | 13,9% | 86,1% | 26,0% | 49,4% | 2004 R./2004 Inc. |
| 2 | 64,1% | 14,6% | 85,4% | 32,9% | 31,2% | 1980 R./2004 Inc. |
| 3 | 73,0% | 0,0% | 100,0% | 50,5% | 22,5% | 1980 R./1980 Inc. |
| 4 | 86,7% | 13,3% | 86,7% | 19,2% | 67,5% | 1980 Ext. R/2004 Inc. |
| 5 | 96,5% | 0,0% | 100,0% | 9,9% | 86,6% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|-----------|---------|-----------|-----------|------|--------|-------|-----------|
| 1 | 25.203.600 | 4.312.975 | 903.77 | 3.409.205 | 4.312.428 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 2 | 12.416.103 | 1.115.449 | 262.639 | 852.81 | 1.115.449 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 3 | 2.483.821 | 175.994 | 35.039 | 140.955 | 175.994 | 0 | 0,0001 | 59,8 | 0,0007500 |
| 4 | 12.787.497 | 3.197.526 | 641.131 | 2.556.395 | 3.196.979 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 5 | 2.559.779 | 564.513 | 92.032 | 472.481 | 564.513 | 0 | 0,0001 | 59,4 | 0,0002500 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 17,1% | 21,0% | 79,0% | 17,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 9,0% | 23,5% | 76,5% | 9,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 7,1% | 19,9% | 80,1% | 7,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 25,0% | 20,1% | 79,9% | 25,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 22,1% | 16,3% | 83,7% | 22,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|-----------|---------|---------|--------|---------|------|--------|------|-----------|
| 1 | 8.261.180 | 774.494 | 703.931 | 70.563 | 774.494 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 2 | 3.961.800 | 202.082 | 188.415 | 13.667 | 202.082 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 3 | 792.6 | 35.039 | 35.039 | 0 | 35.039 | 0 | 0,0001 | 59,8 | 0,0007500 |
| 4 | 4.299.380 | 572.412 | 515.516 | 56.896 | 572.412 | 0 | 0,0001 | 59,8 | 0,0002498 |
| 5 | 860.58 | 92.032 | 92.032 | 0 | 92.032 | 0 | 0,0001 | 59,4 | 0,0002500 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 9,4% | 90,9% | 9,1% | 9,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,1% | 93,2% | 6,8% | 5,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,4% | 100,0% | 0,0% | 4,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 13,3% | 90,1% | 9,9% | 13,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 10,7% | 100,0% | 0,0% | 10,7% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|-----------|---------|-----------|-----------|------|--------|-------|-----------|
| 1 | 16.942.420 | 3.538.481 | 199.839 | 3.338.642 | 3.537.934 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 2 | 8.454.303 | 913.367 | 74.224 | 839.143 | 913.367 | 0 | 0,0001 | 71,7 | 0,0008987 |
| 3 | 1.691.221 | 140.955 | 0 | 140.955 | 140.955 | 0 | 0,0001 | 80,9 | 0,0009160 |
| 4 | 8.488.117 | 2.625.114 | 125.615 | 2.499.499 | 2.624.567 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 5 | 1.699.199 | 472.481 | 0 | 472.481 | 472.481 | 0 | 0,0001 | 134,3 | 0,0002550 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 20,9% | 5,6% | 94,4% | 20,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 10,8% | 8,1% | 91,9% | 10,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | 8,3% | 0,0% | 100,0% | 8,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 30,9% | 4,8% | 95,2% | 30,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 27,8% | 0,0% | 100,0% | 27,8% | 0,0% | 1980 Ext./1980 Inc. |

1.16. Table 6D – lubricants, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base density @ 60 °F: -10 °API to 45 °API, increment 0,1 °API

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|-----------|---------|---------|---------|------|-------|
| 1 | 1.980.000 | 1.593.517 | 323.187 | 1.270.330 | 720.163 | 873.354 | 0,00006 | 23,5 | 35,3 |
| 2 | 1.650.550 | 1.295.864 | 157.239 | 1.138.625 | 653.576 | 642.288 | 0,00006 | 23,5 | 35,3 |
| 3 | 1.650.550 | 1.295.864 | 157.239 | 1.138.625 | 653.576 | 642.288 | 0,00006 | 23,5 | 35,3 |
| 4 | 329.45 | 297.653 | 165.948 | 131.705 | 66.587 | 231.066 | 0,00006 | -0,1 | -4,3 |
| 5 | 329.45 | 297.653 | 165.948 | 131.705 | 66.587 | 231.066 | 0,00006 | -0,1 | -4,3 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 80,5% | 20,3% | 79,7% | 36,4% | 44,1% | 2004 R./2004 Inc. |
| 2 | 78,5% | 12,1% | 87,9% | 39,6% | 38,9% | 1980 R./2004 Inc. |
| 3 | 78,5% | 12,1% | 87,9% | 39,6% | 38,9% | 1980 R./1980 Inc. |
| 4 | 90,3% | 55,8% | 44,2% | 20,2% | 70,1% | 1980 Ext. R/2004 Inc. |
| 5 | 90,3% | 55,8% | 44,2% | 20,2% | 70,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----|---------|---------|---------|---------|---------|---------|------|-------|
| 1 | 649 | 584.329 | 323.187 | 261.142 | 129.914 | 454.415 | 0,00006 | 23,5 | 35,3 |
| 2 | 330 | 297.013 | 157.239 | 139.774 | 65.843 | 231.17 | 0,00006 | 23,5 | 35,3 |
| 3 | 330 | 297.013 | 157.239 | 139.774 | 65.843 | 231.17 | 0,00006 | 23,5 | 35,3 |
| 4 | 319 | 287.316 | 165.948 | 121.368 | 64.071 | 223.245 | 0,00006 | -0,1 | -4,3 |
| 5 | 319 | 287.316 | 165.948 | 121.368 | 64.071 | 223.245 | 0,00006 | -0,1 | -4,3 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 55,3% | 44,7% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 52,9% | 47,1% | 20,0% | 70,1% | 1980 R./2004 Inc. |
| 3 | 90,0% | 52,9% | 47,1% | 20,0% | 70,1% | 1980 R./1980 Inc. |
| 4 | 90,1% | 57,8% | 42,2% | 20,1% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,1% | 57,8% | 42,2% | 20,1% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----|-----------|---------|---------|---------|-------|-------|
| 1 | 1.331.000 | 1.009.188 | 0 | 1.009.188 | 590.249 | 418.939 | 0,00004 | 250,8 | 43 |
| 2 | 1.320.550 | 998.851 | 0 | 998.851 | 587.733 | 411.118 | 0,00004 | 250,8 | 43 |
| 3 | 1.320.550 | 998.851 | 0 | 998.851 | 587.733 | 411.118 | 0,00004 | 250,8 | 43 |
| 4 | 10.45 | 10.337 | 0 | 10.337 | 2.516 | 7.821 | 0,00004 | 300,1 | 10,9 |
| 5 | 10.45 | 10.337 | 0 | 10.337 | 2.516 | 7.821 | 0,00004 | 300,1 | 10,9 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 75,8% | 0,0% | 100,0% | 44,3% | 31,5% | 2004 R./2004 Inc. |
| 2 | 75,6% | 0,0% | 100,0% | 44,5% | 31,1% | 1980 R./2004 Inc. |
| 3 | 75,6% | 0,0% | 100,0% | 44,5% | 31,1% | 1980 R./1980 Inc. |
| 4 | 98,9% | 0,0% | 100,0% | 24,1% | 74,8% | 1980 Ext. R/2004 Inc. |
| 5 | 98,9% | 0,0% | 100,0% | 24,1% | 74,8% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|---------|---------|------|--------|------|-------|
| 1 | 1.980.000 | 167.138 | 30.988 | 136.15 | 167.138 | 0 | 0,0001 | 59,6 | 20,5 |
| 2 | 1.650.550 | 142.591 | 8.658 | 133.933 | 142.591 | 0 | 0,0001 | 59,6 | 20,5 |
| 3 | 1.650.550 | 142.591 | 8.658 | 133.933 | 142.591 | 0 | 0,0001 | 59,6 | 20,5 |
| 4 | 329.45 | 24.547 | 22.33 | 2.217 | 24.547 | 0 | 0,0001 | -0,1 | -9,1 |
| 5 | 329.45 | 24.547 | 22.33 | 2.217 | 24.547 | 0 | 0,0001 | -0,1 | -9,1 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 8,4% | 18,5% | 81,5% | 8,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 8,6% | 6,1% | 93,9% | 8,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 8,6% | 6,1% | 93,9% | 8,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 7,5% | 91,0% | 9,0% | 7,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 7,5% | 91,0% | 9,0% | 7,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----|--------|--------|-----|--------|------|--------|------|-------|
| 1 | 649 | 30.988 | 30.988 | 0 | 30.988 | 0 | 0,0001 | 59,6 | 20,5 |
| 2 | 330 | 8.658 | 8.658 | 0 | 8.658 | 0 | 0,0001 | 59,6 | 20,5 |
| 3 | 330 | 8.658 | 8.658 | 0 | 8.658 | 0 | 0,0001 | 59,6 | 20,5 |
| 4 | 319 | 22.33 | 22.33 | 0 | 22.33 | 0 | 0,0001 | -0,1 | -9,1 |
| 5 | 319 | 22.33 | 22.33 | 0 | 22.33 | 0 | 0,0001 | -0,1 | -9,1 |

| C | P | PG | PL | P1 | PX | |
|---|------|--------|------|------|------|-----------------------|
| 1 | 4,8% | 100,0% | 0,0% | 4,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 2,6% | 100,0% | 0,0% | 2,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 2,6% | 100,0% | 0,0% | 2,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 7,0% | 100,0% | 0,0% | 7,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 7,0% | 100,0% | 0,0% | 7,0% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|---------|------|--------|-------|-------|
| 1 | 1.331.000 | 136.15 | 0 | 136.15 | 136.15 | 0 | 0,0001 | 95 | 34 |
| 2 | 1.320.550 | 133.933 | 0 | 133.933 | 133.933 | 0 | 0,0001 | 95 | 34 |
| 3 | 1.320.550 | 133.933 | 0 | 133.933 | 133.933 | 0 | 0,0001 | 95 | 34 |
| 4 | 10.45 | 2.217 | 0 | 2.217 | 2.217 | 0 | 0,0001 | 300,1 | -9,6 |
| 5 | 10.45 | 2.217 | 0 | 2.217 | 2.217 | 0 | 0,0001 | 300,1 | -9,6 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 10,2% | 0,0% | 100,0% | 10,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | 10,1% | 0,0% | 100,0% | 10,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 10,1% | 0,0% | 100,0% | 10,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 21,2% | 0,0% | 100,0% | 21,2% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 21,2% | 0,0% | 100,0% | 21,2% | 0,0% | 1980 Ext./1980 Inc. |

1.17. Table 24A – crude oil, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base relative density @ 60 °F: 0,6112 to 1,1646, increment 0,1

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|-------|--------|
| 1 | 19.922.400 | 15.656.943 | 5.645.707 | 10.011.236 | 4.971.954 | 10.684.989 | 0,00021 | 293,6 | 0,6128 |
| 2 | 7.510.680 | 5.361.922 | 1.618.614 | 3.743.308 | 2.270.416 | 3.091.506 | 0,00008 | 4,5 | 0,7603 |
| 3 | 1.502.136 | 1.126.037 | 182.937 | 943.1 | 617.175 | 508.862 | 0,00006 | 30,8 | 0,7915 |
| 4 | 12.411.720 | 10.295.021 | 4.027.093 | 6.267.928 | 2.701.538 | 7.593.483 | 0,00021 | 293,6 | 0,6128 |
| 5 | 2.483.064 | 2.151.660 | 482.957 | 1.668.703 | 627.597 | 1.524.063 | 0,00007 | -9,1 | 0,6195 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 78,6% | 36,1% | 63,9% | 25,0% | 53,6% | 2004 R./2004 Inc. |
| 2 | 71,4% | 30,2% | 69,8% | 30,2% | 41,2% | 1980 R./2004 Inc. |
| 3 | 75,0% | 16,2% | 83,8% | 41,1% | 33,9% | 1980 R./1980 Inc. |
| 4 | 82,9% | 39,1% | 60,9% | 21,8% | 61,2% | 1980 Ext. R/2004 Inc. |
| 5 | 86,7% | 22,4% | 77,6% | 25,3% | 61,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 6.530.120 | 5.885.774 | 3.323.710 | 2.562.064 | 1.282.715 | 4.603.059 | 0,00013 | -42,2 | 0,6128 |
| 2 | 1.908.000 | 1.717.214 | 914.971 | 802.243 | 381.213 | 1.336.001 | 0,00008 | 4,5 | 0,7603 |
| 3 | 381.6 | 343.312 | 182.937 | 160.375 | 76.128 | 267.184 | 0,00006 | 30,8 | 0,7915 |
| 4 | 4.622.120 | 4.168.560 | 2.408.739 | 1.759.821 | 901.502 | 3.267.058 | 0,00013 | -42,2 | 0,6128 |
| 5 | 924.66 | 832.627 | 482.957 | 349.67 | 184.708 | 647.919 | 0,00007 | -9,1 | 0,6195 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,1% | 56,5% | 43,5% | 19,6% | 70,5% | 2004 R./2004 Inc. |
| 2 | 90,0% | 53,3% | 46,7% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 53,3% | 46,7% | 19,9% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,2% | 57,8% | 42,2% | 19,5% | 70,7% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 58,0% | 42,0% | 20,0% | 70,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 13.392.280 | 9.771.169 | 2.321.997 | 7.449.172 | 3.689.239 | 6.081.930 | 0,00021 | 293,6 | 0,6128 |
| 2 | 5.602.680 | 3.644.708 | 703.643 | 2.941.065 | 1.889.203 | 1.755.505 | 0,00008 | 227,1 | 0,8333 |
| 3 | 1.120.536 | 782.725 | 0 | 782.725 | 541.047 | 241.678 | 0,00004 | 231,1 | 0,8335 |
| 4 | 7.789.600 | 6.126.461 | 1.618.354 | 4.508.107 | 1.800.036 | 4.326.425 | 0,00021 | 293,6 | 0,6128 |
| 5 | 1.558.404 | 1.319.033 | 0 | 1.319.033 | 442.889 | 876.144 | 0,00007 | 291,5 | 0,6320 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|--------|-------|-------|-----------------------|
| 1 | 73,0% | 23,8% | 76,2% | 27,5% | 45,4% | 2004 R./2004 Inc. |
| 2 | 65,1% | 19,3% | 80,7% | 33,7% | 31,3% | 1980 R./2004 Inc. |
| 3 | 69,9% | 0,0% | 100,0% | 48,3% | 21,6% | 1980 R./1980 Inc. |
| 4 | 78,6% | 26,4% | 73,6% | 23,1% | 55,5% | 1980 Ext. R/2004 Inc. |
| 5 | 84,6% | 0,0% | 100,0% | 28,4% | 56,2% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|--------|--------|-------|--------|
| 1 | 19.922.400 | 3.315.128 | 924.858 | 2.390.270 | 3.235.206 | 79.922 | 0,0003 | 298,3 | 0,6208 |
| 2 | 7.510.680 | 701.867 | 125.915 | 575.952 | 701.867 | 0 | 0,0001 | 59,9 | 0,8268 |
| 3 | 1.502.136 | 99.728 | 11.268 | 88.46 | 99.728 | 0 | 0,0001 | 59,2 | 0,7795 |
| 4 | 12.411.720 | 2.613.261 | 798.943 | 1.814.318 | 2.533.339 | 79.922 | 0,0003 | 298,3 | 0,6208 |
| 5 | 2.483.064 | 342.234 | 66.696 | 275.538 | 342.234 | 0 | 0,0001 | 59,6 | 0,6250 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 16,6% | 27,9% | 72,1% | 16,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | 9,3% | 17,9% | 82,1% | 9,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 6,6% | 11,3% | 88,7% | 6,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 21,1% | 30,6% | 69,4% | 20,4% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 13,8% | 19,5% | 80,5% | 13,8% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|---------|------|--------|------|--------|
| 1 | 6.530.120 | 628.452 | 509.401 | 119.051 | 628.452 | 0 | 0,0001 | 59,9 | 0,8268 |
| 2 | 1.908.000 | 78.752 | 67.408 | 11.344 | 78.752 | 0 | 0,0001 | 59,9 | 0,8268 |
| 3 | 381.6 | 11.268 | 11.268 | 0 | 11.268 | 0 | 0,0001 | 59,2 | 0,7795 |
| 4 | 4.622.120 | 549.7 | 441.993 | 107.707 | 549.7 | 0 | 0,0001 | 59,8 | 0,6752 |
| 5 | 924.66 | 66.696 | 66.696 | 0 | 66.696 | 0 | 0,0001 | 59,6 | 0,6250 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|-------|-------|------|-----------------------|
| 1 | 9,6% | 81,1% | 18,9% | 9,6% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,1% | 85,6% | 14,4% | 4,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 3,0% | 100,0% | 0,0% | 3,0% | 0,0% | 1980 R./1980 Inc. |
| 4 | 11,9% | 80,4% | 19,6% | 11,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 7,2% | 100,0% | 0,0% | 7,2% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|--------|--------|-------|--------|
| 1 | 13.392.280 | 2.686.676 | 415.457 | 2.271.219 | 2.606.754 | 79.922 | 0,0003 | 298,3 | 0,6208 |
| 2 | 5.602.680 | 623.115 | 58.507 | 564.608 | 623.115 | 0 | 0,0001 | 71,4 | 0,7603 |
| 3 | 1.120.536 | 88.46 | 0 | 88.46 | 88.46 | 0 | 0,0001 | 89,4 | 0,7835 |
| 4 | 7.789.600 | 2.063.561 | 356.95 | 1.706.611 | 1.983.639 | 79.922 | 0,0003 | 298,3 | 0,6208 |
| 5 | 1.558.404 | 275.538 | 0 | 275.538 | 275.538 | 0 | 0,0001 | 80,5 | 0,6130 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|--------|-------|------|-----------------------|
| 1 | 20,1% | 15,5% | 84,5% | 19,5% | 0,6% | 2004 R./2004 Inc. |
| 2 | 11,1% | 9,4% | 90,6% | 11,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 7,9% | 0,0% | 100,0% | 7,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 26,5% | 17,3% | 82,7% | 25,5% | 1,0% | 1980 Ext. R/2004 Inc. |
| 5 | 17,7% | 0,0% | 100,0% | 17,7% | 0,0% | 1980 Ext./1980 Inc. |

1.18. Table 24B – products, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base relative density @ 60 °F: 0,6112 to 1,1646, increment 0,1

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|-------|--------|
| 1 | 19.922.400 | 15.484.582 | 4.771.300 | 10.713.282 | 5.062.245 | 10.422.337 | 0,00037 | 297,3 | 0,7718 |
| 2 | 9.091.730 | 6.440.188 | 1.694.479 | 4.745.709 | 2.707.300 | 3.732.888 | 0,00021 | 197,7 | 0,7813 |
| 3 | 1.818.346 | 1.392.532 | 246.364 | 1.146.168 | 745.866 | 646.666 | 0,00006 | 37,1 | 0,7015 |
| 4 | 10.830.670 | 9.044.394 | 3.076.821 | 5.967.573 | 2.354.945 | 6.689.449 | 0,00037 | 297,3 | 0,7718 |
| 5 | 2.166.854 | 1.940.274 | 423.568 | 1.516.706 | 487.819 | 1.452.455 | 0,00007 | -4,5 | 0,6205 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 77,7% | 30,8% | 69,2% | 25,4% | 52,3% | 2004 R./2004 Inc. |
| 2 | | 70,8% | 26,3% | 73,7% | 29,8% | 41,1% | 1980 R./2004 Inc. |
| 3 | | 76,6% | 17,7% | 82,3% | 41,0% | 35,6% | 1980 R./1980 Inc. |
| 4 | | 83,5% | 34,0% | 66,0% | 21,7% | 61,8% | 1980 Ext. R/2004 Inc. |
| 5 | | 89,5% | 21,8% | 78,2% | 22,5% | 67,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 6.530.120 | 5.889.107 | 3.345.072 | 2.544.035 | 1.276.009 | 4.613.098 | 0,00020 | -47,8 | 0,7733 |
| 2 | 2.538.000 | 2.285.873 | 1.231.673 | 1.054.200 | 504.029 | 1.781.844 | 0,00013 | 6,1 | 0,7718 |
| 3 | 507.6 | 456.842 | 246.364 | 210.478 | 101.175 | 355.667 | 0,00006 | 37,1 | 0,7015 |
| 4 | 3.992.120 | 3.603.234 | 2.113.399 | 1.489.835 | 771.98 | 2.831.254 | 0,00020 | -47,8 | 0,7733 |
| 5 | 798.66 | 718.685 | 423.568 | 295.117 | 159.404 | 559.281 | 0,00007 | -4,5 | 0,6205 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 90,2% | 56,8% | 43,2% | 19,5% | 70,6% | 2004 R./2004 Inc. |
| 2 | | 90,1% | 53,9% | 46,1% | 19,9% | 70,2% | 1980 R./2004 Inc. |
| 3 | | 90,0% | 53,9% | 46,1% | 19,9% | 70,1% | 1980 R./1980 Inc. |
| 4 | | 90,3% | 58,7% | 41,3% | 19,3% | 70,9% | 1980 Ext. R/2004 Inc. |
| 5 | | 90,0% | 58,9% | 41,1% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 13.392.280 | 9.595.475 | 1.426.228 | 8.169.247 | 3.786.236 | 5.809.239 | 0,00037 | 297,3 | 0,7718 |
| 2 | 6.553.730 | 4.154.315 | 462.806 | 3.691.509 | 2.203.271 | 1.951.044 | 0,00021 | 197,7 | 0,7813 |
| 3 | 1.310.746 | 935.69 | 0 | 935.69 | 644.691 | 290.999 | 0,00004 | 240,6 | 0,8440 |
| 4 | 6.838.550 | 5.441.160 | 963.422 | 4.477.738 | 1.582.965 | 3.858.195 | 0,00037 | 297,3 | 0,7718 |
| 5 | 1.368.194 | 1.221.589 | 0 | 1.221.589 | 328.415 | 893.174 | 0,00007 | 277,8 | 0,6125 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|--------|-------|-------|-----------------------|
| 1 | | 71,6% | 14,9% | 85,1% | 28,3% | 43,4% | 2004 R./2004 Inc. |
| 2 | | 63,4% | 11,1% | 88,9% | 33,6% | 29,8% | 1980 R./2004 Inc. |
| 3 | | 71,4% | 0,0% | 100,0% | 49,2% | 22,2% | 1980 R./1980 Inc. |
| 4 | | 79,6% | 17,7% | 82,3% | 23,1% | 56,4% | 1980 Ext. R/2004 Inc. |
| 5 | | 89,3% | 0,0% | 100,0% | 24,0% | 65,3% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|-------|--------|
| 1 | 19.922.400 | 3.170.265 | 827.456 | 2.342.809 | 3.019.060 | 151.205 | 0,0004 | 261,1 | 0,7733 |
| 2 | 9.091.730 | 835.047 | 173.027 | 662.02 | 825.04 | 10.007 | 0,0003 | 199,0 | 0,7813 |
| 3 | 1.818.346 | 125.247 | 17.955 | 107.292 | 125.247 | 0 | 0,0001 | 59,6 | 0,9990 |
| 4 | 10.830.670 | 2.335.218 | 654.429 | 1.680.789 | 2.194.020 | 141.198 | 0,0004 | 261,1 | 0,7733 |
| 5 | 2.166.854 | 345.649 | 64.332 | 281.317 | 345.649 | 0 | 0,0001 | 59,0 | 0,6410 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|------|-----------------------|
| 1 | | 15,9% | 26,1% | 73,9% | 15,2% | 0,8% | 2004 R./2004 Inc. |
| 2 | | 9,2% | 20,7% | 79,3% | 9,1% | 0,1% | 1980 R./2004 Inc. |
| 3 | | 6,9% | 14,3% | 85,7% | 6,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 21,6% | 28,0% | 72,0% | 20,3% | 1,3% | 1980 Ext. R/2004 Inc. |
| 5 | | 16,0% | 18,6% | 81,4% | 16,0% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|---------|-------|--------|-------|--------|
| 1 | 6.530.120 | 608.053 | 507.936 | 100.117 | 602.855 | 5.198 | 0,0002 | -14,3 | 0,7718 |
| 2 | 2.538.000 | 130.953 | 109.986 | 20.967 | 130.953 | 0 | 0,0001 | 59,9 | 0,8137 |
| 3 | 507.6 | 17.955 | 17.955 | 0 | 17.955 | 0 | 0,0001 | 59,6 | 0,9990 |
| 4 | 3.992.120 | 477.1 | 397.95 | 79.15 | 471.902 | 5.198 | 0,0002 | -14,3 | 0,7718 |
| 5 | 798.66 | 64.332 | 64.332 | 0 | 64.332 | 0 | 0,0001 | 59,0 | 0,6410 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|-------|-------|------|-----------------------|
| 1 | | 9,3% | 83,5% | 16,5% | 9,2% | 0,1% | 2004 R./2004 Inc. |
| 2 | | 5,2% | 84,0% | 16,0% | 5,2% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 3,5% | 100,0% | 0,0% | 3,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 12,0% | 83,4% | 16,6% | 11,8% | 0,1% | 1980 Ext. R/2004 Inc. |
| 5 | | 8,1% | 100,0% | 0,0% | 8,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|-------|--------|
| 1 | 13.392.280 | 2.562.212 | 319.52 | 2.242.692 | 2.416.205 | 146.007 | 0,0004 | 261,1 | 0,7733 |
| 2 | 6.553.730 | 704.094 | 63.041 | 641.053 | 694.087 | 10.007 | 0,0003 | 199 | 0,7813 |
| 3 | 1.310.746 | 107.292 | 0 | 107.292 | 107.292 | 0 | 0,0001 | 81 | 0,6780 |
| 4 | 6.838.550 | 1.858.118 | 256.479 | 1.601.639 | 1.722.118 | 136 | 0,0004 | 261,1 | 0,7733 |
| 5 | 1.368.194 | 281.317 | 0 | 281.317 | 281.317 | 0 | 0,0001 | 80,1 | 0,6275 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|--------|-------|------|-----------------------|
| 1 | | 19,1% | 12,5% | 87,5% | 18,0% | 1,1% | 2004 R./2004 Inc. |
| 2 | | 10,7% | 9,0% | 91,0% | 10,6% | 0,2% | 1980 R./2004 Inc. |
| 3 | | 8,2% | 0,0% | 100,0% | 8,2% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 27,2% | 13,8% | 86,2% | 25,2% | 2,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 20,6% | 0,0% | 100,0% | 20,6% | 0,0% | 1980 Ext./1980 Inc. |

1.19. Table 24C – special applications, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Thermal expansion coefficient @ 60 °F: 0,0002300 1 /°F to 0,0009300 1 / °F, increment 0,0000001

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

TTLCB: Thermal expansion coefficient for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|-------|-----------|
| 1 | 25.203.600 | 20.210.183 | 6.121.479 | 14.088.704 | 6.055.477 | 14.154.706 | 0,00011 | 283,5 | 0,0009297 |
| 2 | 12.416.103 | 8.983.323 | 2.746.734 | 6.236.589 | 3.569.434 | 5.413.889 | 0,00007 | 23,8 | 0,0008892 |
| 3 | 2.483.821 | 1.948.325 | 391.504 | 1.556.821 | 1.012.810 | 935.515 | 0,00006 | 37,9 | 0,0009130 |
| 4 | 12.787.497 | 11.226.860 | 3.374.745 | 7.852.115 | 2.486.043 | 8.740.817 | 0,00011 | 283,5 | 0,0009297 |
| 5 | 2.559.779 | 2.413.878 | 479.221 | 1.934.657 | 339.225 | 2.074.653 | 0,00007 | -12,6 | 0,0009140 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 80,2% | 30,3% | 69,7% | 24,0% | 56,2% | 2004 R./2004 Inc. |
| 2 | | 72,4% | 30,6% | 69,4% | 28,7% | 43,6% | 1980 R./2004 Inc. |
| 3 | | 78,4% | 20,1% | 79,9% | 40,8% | 37,7% | 1980 R./1980 Inc. |
| 4 | | 87,8% | 30,1% | 69,9% | 19,4% | 68,4% | 1980 Ext. R/2004 Inc. |
| 5 | | 94,3% | 19,9% | 80,1% | 13,3% | 81,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|-------|-----------|
| 1 | 8.261.180 | 7.436.238 | 4.350.481 | 3.085.757 | 1.647.720 | 5.788.518 | 0,00009 | -32,0 | 0,0009242 |
| 2 | 3.961.800 | 3.566.764 | 1.957.011 | 1.609.753 | 791.538 | 2.775.226 | 0,00007 | 23,8 | 0,0008892 |
| 3 | 792.6 | 713.542 | 391.504 | 322.038 | 158.088 | 555.454 | 0,00006 | 37,9 | 0,0009130 |
| 4 | 4.299.380 | 3.869.474 | 2.393.470 | 1.476.004 | 856.182 | 3.013.292 | 0,00009 | -32,0 | 0,0009242 |
| 5 | 860.58 | 774.441 | 479.221 | 295.22 | 171.806 | 602.635 | 0,00007 | -12,6 | 0,0009140 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 90,0% | 58,5% | 41,5% | 19,9% | 70,1% | 2004 R./2004 Inc. |
| 2 | | 90,0% | 54,9% | 45,1% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | | 90,0% | 54,9% | 45,1% | 19,9% | 70,1% | 1980 R./1980 Inc. |
| 4 | | 90,0% | 61,9% | 38,1% | 19,9% | 70,1% | 1980 Ext. R/2004 Inc. |
| 5 | | 90,0% | 61,9% | 38,1% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|------------|-----------|------------|-----------|-----------|---------|-------|-----------|
| 1 | 16.942.420 | 12.773.945 | 1.770.998 | 11.002.947 | 4.407.757 | 8.366.188 | 0,00011 | 283,5 | 0,0009297 |
| 2 | 8.454.303 | 5.416.559 | 789.723 | 4.626.836 | 2.777.896 | 2.638.663 | 0,00007 | 235,1 | 0,0005097 |
| 3 | 1.691.221 | 1.234.783 | 0 | 1.234.783 | 854.722 | 380.061 | 0,00003 | 136,6 | 0,0009275 |
| 4 | 8.488.117 | 7.357.386 | 981.275 | 6.376.111 | 1.629.861 | 5.727.525 | 0,00011 | 283,5 | 0,0009297 |
| 5 | 1.699.199 | 1.639.437 | 0 | 1.639.437 | 167.419 | 1.472.018 | 0,00006 | 263,5 | 0,0009280 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|--------|-------|-------|-----------------------|
| 1 | | 75,4% | 13,9% | 86,1% | 26,0% | 49,4% | 2004 R./2004 Inc. |
| 2 | | 64,1% | 14,6% | 85,4% | 32,9% | 31,2% | 1980 R./2004 Inc. |
| 3 | | 73,0% | 0,0% | 100,0% | 50,5% | 22,5% | 1980 R./1980 Inc. |
| 4 | | 86,7% | 13,3% | 86,7% | 19,2% | 67,5% | 1980 Ext. R/2004 Inc. |
| 5 | | 96,5% | 0,0% | 100,0% | 9,9% | 86,6% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|-----------|---------|-----------|-----------|------|--------|-------|-----------|
| 1 | 25.203.600 | 4.312.975 | 903.77 | 3.409.205 | 4.312.428 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 2 | 12.416.103 | 1.115.449 | 262.639 | 852.81 | 1.115.449 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 3 | 2.483.821 | 175.994 | 35.039 | 140.955 | 175.994 | 0 | 0,0001 | 59,8 | 0,0007500 |
| 4 | 12.787.497 | 3.197.526 | 641.131 | 2.556.395 | 3.196.979 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 5 | 2.559.779 | 564.513 | 92.032 | 472.481 | 564.513 | 0 | 0,0001 | 59,4 | 0,0002500 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 17,1% | 21,0% | 79,0% | 17,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 9,0% | 23,5% | 76,5% | 9,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 7,1% | 19,9% | 80,1% | 7,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 25,0% | 20,1% | 79,9% | 25,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 22,1% | 16,3% | 83,7% | 22,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|-----------|---------|---------|--------|---------|------|--------|------|-----------|
| 1 | 8.261.180 | 774.494 | 703.931 | 70.563 | 774.494 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 2 | 3.961.800 | 202.082 | 188.415 | 13.667 | 202.082 | 0 | 0,0001 | 59,9 | 0,0004998 |
| 3 | 792.6 | 35.039 | 35.039 | 0 | 35.039 | 0 | 0,0001 | 59,8 | 0,0007500 |
| 4 | 4.299.380 | 572.412 | 515.516 | 56.896 | 572.412 | 0 | 0,0001 | 59,8 | 0,0002498 |
| 5 | 860.58 | 92.032 | 92.032 | 0 | 92.032 | 0 | 0,0001 | 59,4 | 0,0002500 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 9,4% | 90,9% | 9,1% | 9,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,1% | 93,2% | 6,8% | 5,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,4% | 100,0% | 0,0% | 4,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | 13,3% | 90,1% | 9,9% | 13,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 10,7% | 100,0% | 0,0% | 10,7% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | TTLCB |
|---|------------|-----------|---------|-----------|-----------|------|--------|-------|-----------|
| 1 | 16.942.420 | 3.538.481 | 199.839 | 3.338.642 | 3.537.934 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 2 | 8.454.303 | 913.367 | 74.224 | 839.143 | 913.367 | 0 | 0,0001 | 71,7 | 0,0008987 |
| 3 | 1.691.221 | 140.955 | 0 | 140.955 | 140.955 | 0 | 0,0001 | 80,9 | 0,0009160 |
| 4 | 8.488.117 | 2.625.114 | 125.615 | 2.499.499 | 2.624.567 | 547 | 0,0002 | 284,6 | 0,0009247 |
| 5 | 1.699.199 | 472.481 | 0 | 472.481 | 472.481 | 0 | 0,0001 | 134,3 | 0,0002550 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 20,9% | 5,6% | 94,4% | 20,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 10,8% | 8,1% | 91,9% | 10,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | 8,3% | 0,0% | 100,0% | 8,3% | 0,0% | 1980 R./1980 Inc. |
| 4 | 30,9% | 4,8% | 95,2% | 30,9% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 27,8% | 0,0% | 100,0% | 27,8% | 0,0% | 1980 Ext./1980 Inc. |

1.20. Table 24D – lubricants, 60 °F base temperature – detailed results

Comparison grid:

Observed temperature: -58 °F to 302 °F, increment 0,1 °F

Base relative density @ 60 °F: 0,8017 to 1,1646, increment 0,1

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations – 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations – 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations – deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations – deviation above one result grid increment: $(NDG1 / NSC) * 100$

VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 13.068.000 | 9.695.454 | 2.264.580 | 7.430.874 | 4.019.280 | 5.676.174 | 0,00008 | -53,7 | 0,8023 |
| 2 | 10.881.626 | 7.731.180 | 1.171.593 | 6.559.587 | 3.576.116 | 4.155.064 | 0,00007 | 284,9 | 0,8023 |
| 3 | 2.175.725 | 1.692.124 | 206.948 | 1.485.176 | 871.21 | 820.914 | 0,00006 | 23,6 | 0,8185 |
| 4 | 2.186.374 | 1.964.274 | 1.092.987 | 871.287 | 443.164 | 1.521.110 | 0,00008 | -53,7 | 0,8023 |
| 5 | 437.875 | 394.946 | 218.11 | 176.836 | 89.268 | 305.678 | 0,00006 | -0,1 | 0,8145 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 74,2% | 23,4% | 76,6% | 30,8% | 43,4% | 2004 R./2004 Inc. |
| 2 | | 71,0% | 15,2% | 84,8% | 32,9% | 38,2% | 1980 R./2004 Inc. |
| 3 | | 77,8% | 12,2% | 87,8% | 40,0% | 37,7% | 1980 R./1980 Inc. |
| 4 | | 89,8% | 55,6% | 44,4% | 20,3% | 69,6% | 1980 Ext. R/2004 Inc. |
| 5 | | 90,2% | 55,2% | 44,8% | 20,4% | 69,8% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|---------|-----------|---------|-------|--------|
| 1 | 4.283.400 | 3.855.428 | 2.124.914 | 1.730.514 | 855.755 | 2.999.673 | 0,00008 | -53,7 | 0,8023 |
| 2 | 2.175.600 | 1.958.355 | 1.035.003 | 923.352 | 434.149 | 1.524.206 | 0,00006 | 39,6 | 0,8023 |
| 3 | 435 | 391.595 | 206.948 | 184.647 | 86.78 | 304.815 | 0,00006 | 23,6 | 0,8185 |
| 4 | 2.107.800 | 1.897.073 | 1.089.911 | 807.162 | 421.606 | 1.475.467 | 0,00008 | -53,7 | 0,8023 |
| 5 | 421.68 | 379.56 | 218.11 | 161.45 | 84.563 | 294.997 | 0,00006 | -0,1 | 0,8145 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|-------|-----------------------|
| 1 | | 90,0% | 55,1% | 44,9% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | | 90,0% | 52,9% | 47,1% | 20,0% | 70,1% | 1980 R./2004 Inc. |
| 3 | | 90,0% | 52,8% | 47,2% | 19,9% | 70,1% | 1980 R./1980 Inc. |
| 4 | | 90,0% | 57,5% | 42,5% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 90,0% | 57,5% | 42,5% | 20,1% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|-----------|-----------|-----------|---------|-------|--------|
| 1 | 8.784.600 | 5.840.026 | 139.666 | 5.700.360 | 3.163.525 | 2.676.501 | 0,00007 | 284,9 | 0,8023 |
| 2 | 8.706.026 | 5.772.825 | 136.59 | 5.636.235 | 3.141.967 | 2.630.858 | 0,00007 | 284,9 | 0,8023 |
| 3 | 1.740.725 | 1.300.529 | 0 | 1.300.529 | 784.43 | 516.099 | 0,00004 | 250,4 | 0,8025 |
| 4 | 78.574 | 67.201 | 3.076 | 64.125 | 21.558 | 45.643 | 0,00007 | 300,1 | 0,8023 |
| 5 | 16.195 | 15.386 | 0 | 15.386 | 4.705 | 10.681 | 0,00004 | 300,1 | 0,8025 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|------|--------|-------|-------|-----------------------|
| 1 | | 66,5% | 2,4% | 97,6% | 36,0% | 30,5% | 2004 R./2004 Inc. |
| 2 | | 66,3% | 2,4% | 97,6% | 36,1% | 30,2% | 1980 R./2004 Inc. |
| 3 | | 74,7% | 0,0% | 100,0% | 45,1% | 29,6% | 1980 R./1980 Inc. |
| 4 | | 85,5% | 4,6% | 95,4% | 27,4% | 58,1% | 1980 Ext. R/2004 Inc. |
| 5 | | 95,0% | 0,0% | 100,0% | 29,1% | 66,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|---------|-----------|------|--------|------|--------|
| 1 | 13.068.000 | 1.099.774 | 205.595 | 894.179 | 1.099.774 | 0 | 0,0001 | 59,6 | 0,9308 |
| 2 | 10.881.626 | 934.143 | 59.665 | 874.478 | 934.143 | 0 | 0,0001 | 59,6 | 0,9308 |
| 3 | 2.175.725 | 181.681 | 11.058 | 170.623 | 181.681 | 0 | 0,0001 | 59,6 | 0,9310 |
| 4 | 2.186.374 | 165.631 | 145.93 | 19.701 | 165.631 | 0 | 0,0001 | 43,8 | 11,643 |
| 5 | 437.875 | 31.256 | 28.227 | 3.029 | 31.256 | 0 | 0,0001 | 43,8 | 11,645 |

| C | | P | PG | PL | P1 | PX | |
|---|--|------|-------|-------|------|------|-----------------------|
| 1 | | 8,4% | 18,7% | 81,3% | 8,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 8,6% | 6,4% | 93,6% | 8,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 8,4% | 6,1% | 93,9% | 8,4% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 7,6% | 88,1% | 11,9% | 7,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 7,1% | 90,3% | 9,7% | 7,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|-------|---------|------|--------|------|--------|
| 1 | 4.283.400 | 207.578 | 202.166 | 5.412 | 207.578 | 0 | 0,0001 | 59,6 | 0,9308 |
| 2 | 2.175.600 | 57.418 | 56.426 | 992 | 57.418 | 0 | 0,0001 | 59,6 | 0,9308 |
| 3 | 435 | 11.058 | 11.058 | 0 | 11.058 | 0 | 0,0001 | 59,6 | 0,9310 |
| 4 | 2.107.800 | 150.16 | 145.74 | 4.42 | 150.16 | 0 | 0,0001 | 43,8 | 11,643 |
| 5 | 421.68 | 28.227 | 28.227 | 0 | 28.227 | 0 | 0,0001 | 43,8 | 11,645 |

| C | | P | PG | PL | P1 | PX | |
|---|--|------|--------|------|------|------|-----------------------|
| 1 | | 4,8% | 97,4% | 2,6% | 4,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 2,6% | 98,3% | 1,7% | 2,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 2,5% | 100,0% | 0,0% | 2,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 7,1% | 97,1% | 2,9% | 7,1% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 6,7% | 100,0% | 0,0% | 6,7% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-------|---------|---------|------|--------|-------|--------|
| 1 | 8.784.600 | 892.196 | 3.429 | 888.767 | 892.196 | 0 | 0,0001 | 81,9 | 0,8473 |
| 2 | 8.706.026 | 876.725 | 3.239 | 873.486 | 876.725 | 0 | 0,0001 | 81,9 | 0,8473 |
| 3 | 1.740.725 | 170.623 | 0 | 170.623 | 170.623 | 0 | 0,0001 | 93,3 | 0,8430 |
| 4 | 78.574 | 15.471 | 190 | 15.281 | 15.471 | 0 | 0,0001 | 102,7 | 11,643 |
| 5 | 16.195 | 3.029 | 0 | 3.029 | 3.029 | 0 | 0,0001 | 121,2 | 11,645 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|------|--------|-------|------|-----------------------|
| 1 | | 10,2% | 0,4% | 99,6% | 10,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 10,1% | 0,4% | 99,6% | 10,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 9,8% | 0,0% | 100,0% | 9,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 19,7% | 1,2% | 98,8% | 19,7% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 18,7% | 0,0% | 100,0% | 18,7% | 0,0% | 1980 Ext./1980 Inc. |

1.21. Table 54A – crude oil, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 15 °C: 611,2 kg/m³ to 1.163,8 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.109.526 | 18.106.150 | 3.994.035 | 14.112.115 | 4.552.738 | 13.553.412 | 0,00039 | 149,60 | 611,3 |
| 2 | 8.241.175 | 6.173.591 | 1.071.145 | 5.102.446 | 2.036.112 | 4.137.479 | 0,00011 | 114,85 | 827,8 |
| 3 | 1.648.235 | 1.402.621 | 208.897 | 1.193.724 | 459.273 | 943.348 | 0,00006 | 4,20 | 763,0 |
| 4 | 13.868.351 | 11.932.559 | 2.922.890 | 9.009.669 | 2.516.626 | 9.415.933 | 0,00039 | 149,60 | 611,3 |
| 5 | 2.772.870 | 2.536.446 | 580.706 | 1.955.740 | 456.848 | 2.079.598 | 0,00023 | 145,15 | 611,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 81,9% | 22,1% | 77,9% | 20,6% | 61,3% | 2004 R./2004 Inc. |
| 2 | 74,9% | 17,4% | 82,6% | 24,7% | 50,2% | 1980 R./2004 Inc. |
| 3 | 85,1% | 14,9% | 85,1% | 27,9% | 57,2% | 1980 R./1980 Inc. |
| 4 | 86,0% | 24,5% | 75,5% | 18,1% | 67,9% | 1980 Ext. R/2004 Inc. |
| 5 | 91,5% | 22,9% | 77,1% | 16,5% | 75,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.183.800 | 6.483.333 | 3.935.632 | 2.547.701 | 1.390.761 | 5.092.572 | 0,00014 | -41,35 | 611,3 |
| 2 | 2.095.500 | 1.886.173 | 1.044.804 | 841.369 | 418.663 | 1.467.510 | 0,00008 | -10,55 | 762,3 |
| 3 | 419,1 | 377.234 | 208.897 | 168.337 | 83.84 | 293.394 | 0,00006 | 4,20 | 763,0 |
| 4 | 5.088.300 | 4.597.160 | 2.890.828 | 1.706.332 | 972.098 | 3.625.062 | 0,00014 | -41,35 | 611,3 |
| 5 | 1.017.400 | 915.833 | 580.706 | 335.127 | 203.14 | 712.693 | 0,00008 | -19,70 | 614,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,2% | 60,7% | 39,3% | 19,4% | 70,9% | 2004 R./2004 Inc. |
| 2 | 90,0% | 55,4% | 44,6% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 55,4% | 44,6% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,3% | 62,9% | 37,1% | 19,1% | 71,2% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 63,4% | 36,6% | 20,0% | 70,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|--------|------------|-----------|-----------|---------|--------|-------|
| 1 | 14.925.726 | 11.622.817 | 58.403 | 11.564.414 | 3.161.977 | 8.460.840 | 0,00039 | 149,60 | 611,3 |
| 2 | 6.145.675 | 4.287.418 | 26.341 | 4.261.077 | 1.617.449 | 2.669.969 | 0,00011 | 114,85 | 827,8 |
| 3 | 1.229.135 | 1.025.387 | 0 | 1.025.387 | 375.433 | 649.954 | 0,00006 | 106,80 | 828,0 |
| 4 | 8.780.051 | 7.335.399 | 32.062 | 7.303.337 | 1.544.528 | 5.790.871 | 0,00039 | 149,60 | 611,3 |
| 5 | 1.755.470 | 1.620.613 | 0 | 1.620.613 | 253.708 | 1.366.905 | 0,00023 | 145,15 | 611,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 77,9% | 0,5% | 99,5% | 21,2% | 56,7% | 2004 R./2004 Inc. |
| 2 | 69,8% | 0,6% | 99,4% | 26,3% | 43,4% | 1980 R./2004 Inc. |
| 3 | 83,4% | 0,0% | 100,0% | 30,5% | 52,9% | 1980 R./1980 Inc. |
| 4 | 83,5% | 0,4% | 99,6% | 17,6% | 66,0% | 1980 Ext. R/2004 Inc. |
| 5 | 92,3% | 0,0% | 100,0% | 14,5% | 77,9% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.109.526 | 5.306.362 | 768.59 | 4.537.772 | 4.708.135 | 598.227 | 0,0004 | 124,25 | 611,3 |
| 2 | 8.241.175 | 1.122.293 | 104.419 | 1.017.874 | 1.122.283 | 10 | 0,0002 | 115,80 | 827,8 |
| 3 | 1.648.235 | 223.404 | 20.31 | 203.094 | 223.404 | 0 | 0,0001 | 14,70 | 858,5 |
| 4 | 13.868.351 | 4.184.069 | 664.171 | 3.519.898 | 3.585.852 | 598.217 | 0,0004 | 124,25 | 611,3 |
| 5 | 2.772.870 | 888.344 | 123.054 | 765.29 | 818.263 | 70.081 | 0,0003 | 135,85 | 613,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 24,0% | 14,5% | 85,5% | 21,3% | 2,7% | 2004 R./2004 Inc. |
| 2 | 13,6% | 9,3% | 90,7% | 13,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 13,6% | 9,1% | 90,9% | 13,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 30,2% | 15,9% | 84,1% | 25,9% | 4,3% | 1980 Ext. R/2004 Inc. |
| 5 | 32,0% | 13,9% | 86,1% | 29,5% | 2,5% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|--------|---------|------|--------|-------|-------|
| 1 | 7.183.800 | 821.449 | 768.59 | 52.859 | 821.449 | 0 | 0,0001 | 14,90 | 639,8 |
| 2 | 2.095.500 | 107.549 | 104.419 | 3.13 | 107.549 | 0 | 0,0001 | 14,80 | 904,8 |
| 3 | 419.1 | 20.31 | 20.31 | 0 | 20.31 | 0 | 0,0001 | 14,70 | 858,5 |
| 4 | 5.088.300 | 713.9 | 664.171 | 49.729 | 713.9 | 0 | 0,0001 | 14,90 | 639,8 |
| 5 | 1.017.400 | 123.054 | 123.054 | 0 | 123.054 | 0 | 0,0001 | 14,70 | 725,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 11,4% | 93,6% | 6,4% | 11,4% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,1% | 97,1% | 2,9% | 5,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 4,8% | 100,0% | 0,0% | 4,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 14,0% | 93,0% | 7,0% | 14,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 12,1% | 100,0% | 0,0% | 12,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.925.726 | 4.484.913 | 0 | 4.484.913 | 3.886.686 | 598.227 | 0,0004 | 124,25 | 611,3 |
| 2 | 6.145.675 | 1.014.744 | 0 | 1.014.744 | 1.014.734 | 10 | 0,0002 | 115,80 | 827,8 |
| 3 | 1.229.135 | 203.094 | 0 | 203.094 | 203.094 | 0 | 0,0001 | 24,45 | 772,5 |
| 4 | 8.780.051 | 3.470.169 | 0 | 3.470.169 | 2.871.952 | 598.217 | 0,0004 | 124,25 | 611,3 |
| 5 | 1.755.470 | 765.29 | 0 | 765.29 | 695.209 | 70.081 | 0,0003 | 135,85 | 613,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 30,0% | 0,0% | 100,0% | 26,0% | 4,0% | 2004 R./2004 Inc. |
| 2 | 16,5% | 0,0% | 100,0% | 16,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 16,5% | 0,0% | 100,0% | 16,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 39,5% | 0,0% | 100,0% | 32,7% | 6,8% | 1980 Ext. R/2004 Inc. |
| 5 | 43,6% | 0,0% | 100,0% | 39,6% | 4,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.109.526 | 19.694.494 | 3.949.814 | 15.744.680 | 4.585.282 | 15.109.212 | 0,00024 | 149,30 | 611,2 |
| 2 | 8.234.931 | 7.008.322 | 1.043.348 | 5.964.974 | 2.290.855 | 4.717.467 | 0,00007 | -17,60 | 764,7 |
| 3 | 8.234.931 | 7.008.322 | 1.043.348 | 5.964.974 | 2.290.855 | 4.717.467 | 0,00007 | -17,60 | 764,7 |
| 4 | 13.874.595 | 12.686.172 | 2.906.466 | 9.779.706 | 2.294.427 | 10.391.745 | 0,00024 | 149,30 | 611,2 |
| 5 | 13.874.595 | 12.686.172 | 2.906.466 | 9.779.706 | 2.294.427 | 10.391.745 | 0,00024 | 149,30 | 611,2 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 89,1% | 20,1% | 79,9% | 20,7% | 68,3% | 2004 R./2004 Inc. |
| 2 | 85,1% | 14,9% | 85,1% | 27,8% | 57,3% | 1980 R./2004 Inc. |
| 3 | 85,1% | 14,9% | 85,1% | 27,8% | 57,3% | 1980 R./1980 Inc. |
| 4 | 91,4% | 22,9% | 77,1% | 16,5% | 74,9% | 1980 Ext. R/2004 Inc. |
| 5 | 91,4% | 22,9% | 77,1% | 16,5% | 74,9% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.183.800 | 6.465.581 | 3.949.814 | 2.515.767 | 1.434.442 | 5.031.139 | 0,00008 | -19,70 | 614,5 |
| 2 | 2.092.860 | 1.883.797 | 1.043.348 | 840.449 | 418.14 | 1.465.657 | 0,00007 | -17,60 | 764,7 |
| 3 | 2.092.860 | 1.883.797 | 1.043.348 | 840.449 | 418.14 | 1.465.657 | 0,00007 | -17,60 | 764,7 |
| 4 | 5.090.940 | 4.581.784 | 2.906.466 | 1.675.318 | 1.016.302 | 3.565.482 | 0,00008 | -19,70 | 614,5 |
| 5 | 5.090.940 | 4.581.784 | 2.906.466 | 1.675.318 | 1.016.302 | 3.565.482 | 0,00008 | -19,70 | 614,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 61,1% | 38,9% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 55,4% | 44,6% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 55,4% | 44,6% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 63,4% | 36,6% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 63,4% | 36,6% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----|------------|-----------|------------|---------|--------|-------|
| 1 | 14.925.726 | 13.228.913 | 0 | 13.228.913 | 3.150.840 | 10.078.073 | 0,00024 | 149,30 | 611,2 |
| 2 | 6.142.071 | 5.124.525 | 0 | 5.124.525 | 1.872.715 | 3.251.810 | 0,00006 | 105,15 | 824,6 |
| 3 | 6.142.071 | 5.124.525 | 0 | 5.124.525 | 1.872.715 | 3.251.810 | 0,00006 | 105,15 | 824,6 |
| 4 | 8.783.655 | 8.104.388 | 0 | 8.104.388 | 1.278.125 | 6.826.263 | 0,00024 | 149,30 | 611,2 |
| 5 | 8.783.655 | 8.104.388 | 0 | 8.104.388 | 1.278.125 | 6.826.263 | 0,00024 | 145,15 | 611,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 88,6% | 0,0% | 100,0% | 21,1% | 67,5% | 2004 R./2004 Inc. |
| 2 | 83,4% | 0,0% | 100,0% | 30,5% | 52,9% | 1980 R./2004 Inc. |
| 3 | 83,4% | 0,0% | 100,0% | 30,5% | 52,9% | 1980 R./1980 Inc. |
| 4 | 92,3% | 0,0% | 100,0% | 14,6% | 77,7% | 1980 Ext. R/2004 Inc. |
| 5 | 92,3% | 0,0% | 100,0% | 14,6% | 77,7% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.109.526 | 5.562.797 | 716.705 | 4.846.092 | 5.208.171 | 354.626 | 0,0003 | 135,70 | 611,2 |
| 2 | 8.234.931 | 1.118.103 | 101.019 | 1.017.084 | 1.118.103 | 0 | 0,0001 | 14,95 | 783,6 |
| 3 | 8.234.931 | 1.118.103 | 101.019 | 1.017.084 | 1.118.103 | 0 | 0,0001 | 14,95 | 783,6 |
| 4 | 13.874.595 | 4.444.694 | 615.686 | 3.829.008 | 4.090.068 | 354.626 | 0,0003 | 135,70 | 611,2 |
| 5 | 13.874.595 | 4.444.694 | 615.686 | 3.829.008 | 4.090.068 | 354.626 | 0,0003 | 135,70 | 611,2 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|-------|-------|-------|------|-----------------------|
| 1 | | 25,2% | 12,9% | 87,1% | 23,6% | 1,6% | 2004 R./2004 Inc. |
| 2 | | 13,6% | 9,0% | 91,0% | 13,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 13,6% | 9,0% | 91,0% | 13,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 32,0% | 13,9% | 86,1% | 29,5% | 2,6% | 1980 Ext. R/2004 Inc. |
| 5 | | 32,0% | 13,9% | 86,1% | 29,5% | 2,6% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|------|--------|-------|-------|---------|
| 1 | 7.183.800 | 716.705 | 716.705 | 716.705 | 0 | 0,0001 | 14,95 | 783,6 | 716.705 |
| 2 | 2.092.860 | 101.019 | 101.019 | 101.019 | 0 | 0,0001 | 14,95 | 783,6 | 101.019 |
| 3 | 2.092.860 | 101.019 | 101.019 | 101.019 | 0 | 0,0001 | 14,95 | 783,6 | 101.019 |
| 4 | 5.090.940 | 615.686 | 615.686 | 615.686 | 0 | 0,0001 | 14,90 | 639,8 | 615.686 |
| 5 | 5.090.940 | 615.686 | 615.686 | 615.686 | 0 | 0,0001 | 14,90 | 639,8 | 615.686 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|--------|------|-------|------|-----------------------|
| 1 | | 10,0% | 100,0% | 0,0% | 10,0% | 0,0% | 2004 R./2004 Inc. |
| 2 | | 4,8% | 100,0% | 0,0% | 4,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 4,8% | 100,0% | 0,0% | 4,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 12,1% | 100,0% | 0,0% | 12,1% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 12,1% | 100,0% | 0,0% | 12,1% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.925.726 | 4.846.092 | 0 | 4.846.092 | 4.491.466 | 354.626 | 0,0003 | 135,70 | 611,2 |
| 2 | 6.142.071 | 1.017.084 | 0 | 1.017.084 | 1.017.084 | 0 | 0,0001 | 23,95 | 759,8 |
| 3 | 6.142.071 | 1.017.084 | 0 | 1.017.084 | 1.017.084 | 0 | 0,0001 | 23,95 | 759,8 |
| 4 | 8.783.655 | 3.829.008 | 0 | 3.829.008 | 3.474.382 | 354.626 | 0,0003 | 135,70 | 611,2 |
| 5 | 8.783.655 | 3.829.008 | 0 | 3.829.008 | 3.474.382 | 354.626 | 0,0003 | 135,85 | 613,5 |

| C | | P | PG | PL | P1 | PX | |
|---|--|-------|------|--------|-------|------|-----------------------|
| 1 | | 32,5% | 0,0% | 100,0% | 30,1% | 2,4% | 2004 R./2004 Inc. |
| 2 | | 16,6% | 0,0% | 100,0% | 16,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | | 16,6% | 0,0% | 100,0% | 16,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | | 43,6% | 0,0% | 100,0% | 39,6% | 4,0% | 1980 Ext. R/2004 Inc. |
| 5 | | 43,6% | 0,0% | 100,0% | 39,6% | 4,0% | 1980 Ext./1980 Inc. |

1.22. Table 54B – products, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 15 °C: 611,2 kg/m³ to 1.163,9 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.113.527 | 16.611.391 | 4.621.878 | 11.989.513 | 5.543.633 | 11.067.758 | 0,00105 | 149,95 | 771,3 |
| 2 | 9.880.225 | 6.671.684 | 1.932.045 | 4.739.639 | 2.896.755 | 3.774.929 | 0,00053 | 88,40 | 778,8 |
| 3 | 1.976.045 | 1.371.607 | 273.52 | 1.098.087 | 729.115 | 642.492 | 0,00036 | 88,95 | 779,0 |
| 4 | 12.233.302 | 9.939.707 | 2.689.833 | 7.249.874 | 2.646.878 | 7.292.829 | 0,00105 | 149,95 | 771,3 |
| 5 | 2.445.060 | 2.120.501 | 431.603 | 1.688.898 | 580.245 | 1.540.256 | 0,00072 | 149,95 | 771,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 75,1% | 27,8% | 72,2% | 25,1% | 50,0% | 2004 R./2004 Inc. |
| 2 | 67,5% | 29,0% | 71,0% | 29,3% | 38,2% | 1980 R./2004 Inc. |
| 3 | 69,4% | 19,9% | 80,1% | 36,9% | 32,5% | 1980 R./1980 Inc. |
| 4 | 81,3% | 27,1% | 72,9% | 21,6% | 59,6% | 1980 Ext. R/2004 Inc. |
| 5 | 86,7% | 20,4% | 79,6% | 23,7% | 63,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.185.100 | 6.485.874 | 3.524.152 | 2.961.722 | 1.394.981 | 5.090.893 | 0,00047 | -48,75 | 771,3 |
| 2 | 2.788.500 | 2.516.809 | 1.365.380 | 1.151.429 | 543.652 | 1.973.157 | 0,00027 | -16,55 | 771,3 |
| 3 | 557.7 | 503.62 | 273.52 | 230.1 | 108.457 | 395.163 | 0,00020 | -16,55 | 771,5 |
| 4 | 4.396.600 | 3.969.065 | 2.158.772 | 1.810.293 | 851.329 | 3.117.736 | 0,00047 | -48,75 | 771,3 |
| 5 | 878.8 | 793.334 | 431.603 | 361.731 | 171.449 | 621.885 | 0,00033 | -48,70 | 771,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,3% | 54,3% | 45,7% | 19,4% | 70,9% | 2004 R./2004 Inc. |
| 2 | 90,3% | 54,3% | 45,7% | 19,5% | 70,8% | 1980 R./2004 Inc. |
| 3 | 90,3% | 54,3% | 45,7% | 19,4% | 70,9% | 1980 R./1980 Inc. |
| 4 | 90,3% | 54,4% | 45,6% | 19,4% | 70,9% | 1980 Ext. R/2004 Inc. |
| 5 | 90,3% | 54,4% | 45,6% | 19,5% | 70,8% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 14.928.427 | 10.125.517 | 1.097.726 | 9.027.791 | 4.148.652 | 5.976.865 | 0,00105 | 149,95 | 771,3 |
| 2 | 7.091.725 | 4.154.875 | 566.665 | 3.588.210 | 2.353.103 | 1.801.772 | 0,00053 | 88,40 | 778,8 |
| 3 | 1.418.345 | 867.987 | 0 | 867.987 | 620.658 | 247.329 | 0,00036 | 88,95 | 779,0 |
| 4 | 7.836.702 | 5.970.642 | 531.061 | 5.439.581 | 1.795.549 | 4.175.093 | 0,00105 | 149,95 | 771,3 |
| 5 | 1.566.260 | 1.327.167 | 0 | 1.327.167 | 408.796 | 918.371 | 0,00072 | 149,95 | 771,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|--------|-------|-------|-----------------------|
| 1 | 67,8% | 10,8% | 89,2% | 27,8% | 40,0% | 2004 R./2004 Inc. |
| 2 | 58,6% | 13,6% | 86,4% | 33,2% | 25,4% | 1980 R./2004 Inc. |
| 3 | 61,2% | 0,0% | 100,0% | 43,8% | 17,4% | 1980 R./1980 Inc. |
| 4 | 76,2% | 8,9% | 91,1% | 22,9% | 53,3% | 1980 Ext. R/2004 Inc. |
| 5 | 84,7% | 0,0% | 100,0% | 26,1% | 58,6% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.113.527 | 3.887.834 | 564.962 | 3.322.872 | 3.231.564 | 656.27 | 0,0011 | 146,40 | 771,3 |
| 2 | 9.880.225 | 917.798 | 173.508 | 744.29 | 820.835 | 96.963 | 0,0006 | 86,20 | 778,8 |
| 3 | 1.976.045 | 150.601 | 26.985 | 123.616 | 130.117 | 20.484 | 0,0004 | 80,05 | 779,0 |
| 4 | 12.233.302 | 2.970.036 | 391.454 | 2.578.582 | 2.410.729 | 559.307 | 0,0011 | 146,40 | 771,3 |
| 5 | 2.445.060 | 565.855 | 47.735 | 518.12 | 489.248 | 76.607 | 0,0008 | 148,65 | 771,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 17,6% | 14,5% | 85,5% | 14,6% | 3,0% | 2004 R./2004 Inc. |
| 2 | 9,3% | 18,9% | 81,1% | 8,3% | 1,0% | 1980 R./2004 Inc. |
| 3 | 7,6% | 17,9% | 82,1% | 6,6% | 1,0% | 1980 R./1980 Inc. |
| 4 | 24,3% | 13,2% | 86,8% | 19,7% | 4,6% | 1980 Ext. R/2004 Inc. |
| 5 | 23,1% | 8,4% | 91,6% | 20,0% | 3,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|---------|--------|--------|--------|-------|
| 1 | 7.185.100 | 665.904 | 511.429 | 154.475 | 580.148 | 85.756 | 0,0005 | -46,25 | 771,3 |
| 2 | 2.788.500 | 171.785 | 150.756 | 21.029 | 159.602 | 12.183 | 0,0003 | -14,75 | 771,3 |
| 3 | 557.7 | 26.998 | 26.985 | 13 | 25.579 | 1.419 | 0,0002 | -7,15 | 771,5 |
| 4 | 4.396.600 | 494.119 | 360.673 | 133.446 | 420.546 | 73.573 | 0,0005 | -46,25 | 771,3 |
| 5 | 878.8 | 49.606 | 47.735 | 1.871 | 30.996 | 18.61 | 0,0003 | -29,70 | 771,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|-------|------|------|-----------------------|
| 1 | 9,3% | 76,8% | 23,2% | 8,1% | 1,2% | 2004 R./2004 Inc. |
| 2 | 6,2% | 87,8% | 12,2% | 5,7% | 0,4% | 1980 R./2004 Inc. |
| 3 | 4,8% | 100,0% | 0,0% | 4,6% | 0,3% | 1980 R./1980 Inc. |
| 4 | 11,2% | 73,0% | 27,0% | 9,6% | 1,7% | 1980 Ext. R/2004 Inc. |
| 5 | 5,6% | 96,2% | 3,8% | 3,5% | 2,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|--------|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.928.427 | 3.221.930 | 53.533 | 3.168.397 | 2.651.416 | 570.514 | 0,0011 | 146,40 | 771,3 |
| 2 | 7.091.725 | 746.013 | 22.752 | 723.261 | 661.233 | 84.78 | 0,0006 | 86,20 | 778,8 |
| 3 | 1.418.345 | 123.603 | 0 | 123.603 | 104.538 | 19.065 | 0,0004 | 80,05 | 779,0 |
| 4 | 7.836.702 | 2.475.917 | 30.781 | 2.445.136 | 1.990.183 | 485.734 | 0,0011 | 146,40 | 771,3 |
| 5 | 1.566.260 | 516.249 | 0 | 516.249 | 458.252 | 57.997 | 0,0008 | 148,65 | 771,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 21,6% | 1,7% | 98,3% | 17,8% | 3,8% | 2004 R./2004 Inc. |
| 2 | 10,5% | 3,0% | 97,0% | 9,3% | 1,2% | 1980 R./2004 Inc. |
| 3 | 8,7% | 0,0% | 100,0% | 7,4% | 1,3% | 1980 R./1980 Inc. |
| 4 | 31,6% | 1,2% | 98,8% | 25,4% | 6,2% | 1980 Ext. R/2004 Inc. |
| 5 | 33,0% | 0,0% | 100,0% | 29,3% | 3,7% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.113.527 | 17.509.065 | 3.528.993 | 13.980.072 | 6.522.704 | 10.986.361 | 0,00072 | 148,60 | 770,9 |
| 2 | 9.873.981 | 6.894.071 | 1.367.128 | 5.526.943 | 3.661.731 | 3.232.340 | 0,00036 | 88,95 | 779,0 |
| 3 | 9.873.981 | 6.894.071 | 1.367.128 | 5.526.943 | 3.661.731 | 3.232.340 | 0,00036 | 88,95 | 779,0 |
| 4 | 12.239.546 | 10.614.994 | 2.161.865 | 8.453.129 | 2.860.973 | 7.754.021 | 0,00072 | 148,60 | 770,9 |
| 5 | 12.239.546 | 10.614.994 | 2.161.865 | 8.453.129 | 2.860.973 | 7.754.021 | 0,00072 | 148,60 | 770,9 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 79,2% | 20,2% | 79,8% | 29,5% | 49,7% | 2004 R./2004 Inc. |
| 2 | 69,8% | 19,8% | 80,2% | 37,1% | 32,7% | 1980 R./2004 Inc. |
| 3 | 69,8% | 19,8% | 80,2% | 37,1% | 32,7% | 1980 R./1980 Inc. |
| 4 | 86,7% | 20,4% | 79,6% | 23,4% | 63,4% | 1980 Ext. R/2004 Inc. |
| 5 | 86,7% | 20,4% | 79,6% | 23,4% | 63,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.185.100 | 6.486.033 | 3.528.993 | 2.957.040 | 1.399.429 | 5.086.604 | 0,00033 | -47,35 | 770,9 |
| 2 | 2.785.860 | 2.515.236 | 1.367.128 | 1.148.108 | 541.614 | 1.973.622 | 0,00020 | -16,55 | 771,5 |
| 3 | 2.785.860 | 2.515.236 | 1.367.128 | 1.148.108 | 541.614 | 1.973.622 | 0,00020 | -16,55 | 771,5 |
| 4 | 4.399.240 | 3.970.797 | 2.161.865 | 1.808.932 | 857.815 | 3.112.982 | 0,00033 | -47,35 | 770,9 |
| 5 | 4.399.240 | 3.970.797 | 2.161.865 | 1.808.932 | 857.815 | 3.112.982 | 0,00033 | -47,35 | 770,9 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,3% | 54,4% | 45,6% | 19,5% | 70,8% | 2004 R./2004 Inc. |
| 2 | 90,3% | 54,4% | 45,6% | 19,4% | 70,8% | 1980 R./2004 Inc. |
| 3 | 90,3% | 54,4% | 45,6% | 19,4% | 70,8% | 1980 R./1980 Inc. |
| 4 | 90,3% | 54,4% | 45,6% | 19,5% | 70,8% | 1980 Ext. R/2004 Inc. |
| 5 | 90,3% | 54,4% | 45,6% | 19,5% | 70,8% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----|------------|-----------|-----------|---------|--------|-------|
| 1 | 14.928.427 | 11.023.032 | 0 | 11.023.032 | 5.123.275 | 5.899.757 | 0,00072 | 148,60 | 770,9 |
| 2 | 7.088.121 | 4.378.835 | 0 | 4.378.835 | 3.120.117 | 1.258.718 | 0,00036 | 88,95 | 779,0 |
| 3 | 7.088.121 | 4.378.835 | 0 | 4.378.835 | 3.120.117 | 1.258.718 | 0,00036 | 88,95 | 779,0 |
| 4 | 7.840.306 | 6.644.197 | 0 | 6.644.197 | 2.003.158 | 4.641.039 | 0,00072 | 148,60 | 770,9 |
| 5 | 7.840.306 | 6.644.197 | 0 | 6.644.197 | 2.003.158 | 4.641.039 | 0,00072 | 149,95 | 771,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 73,8% | 0,0% | 100,0% | 34,3% | 39,5% | 2004 R./2004 Inc. |
| 2 | 61,8% | 0,0% | 100,0% | 44,0% | 17,8% | 1980 R./2004 Inc. |
| 3 | 61,8% | 0,0% | 100,0% | 44,0% | 17,8% | 1980 R./1980 Inc. |
| 4 | 84,7% | 0,0% | 100,0% | 25,5% | 59,2% | 1980 Ext. R/2004 Inc. |
| 5 | 84,7% | 0,0% | 100,0% | 25,5% | 59,2% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.113.527 | 3.601.711 | 376.47 | 3.225.241 | 3.116.627 | 485.084 | 0,0008 | 148,10 | 770,9 |
| 2 | 9.873.981 | 763.678 | 135.889 | 627.789 | 660.743 | 102.935 | 0,0004 | 79,20 | 779,9 |
| 3 | 9.873.981 | 763.678 | 135.889 | 627.789 | 660.743 | 102.935 | 0,0004 | 79,20 | 779,9 |
| 4 | 12.239.546 | 2.838.033 | 240.581 | 2.597.452 | 2.455.884 | 382.149 | 0,0008 | 148,10 | 770,9 |
| 5 | 12.239.546 | 2.838.033 | 240.581 | 2.597.452 | 2.455.884 | 382.149 | 0,0008 | 148,10 | 770,9 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 16,3% | 10,5% | 89,5% | 14,1% | 2,2% | 2004 R./2004 Inc. |
| 2 | 7,7% | 17,8% | 82,2% | 6,7% | 1,0% | 1980 R./2004 Inc. |
| 3 | 7,7% | 17,8% | 82,2% | 6,7% | 1,0% | 1980 R./1980 Inc. |
| 4 | 23,2% | 8,5% | 91,5% | 20,1% | 3,1% | 1980 Ext. R/2004 Inc. |
| 5 | 23,2% | 8,5% | 91,5% | 20,1% | 3,1% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|-------|---------|--------|--------|--------|-------|
| 1 | 7.185.100 | 385.221 | 376.47 | 8.751 | 285.461 | 99.76 | 0,0003 | -29,25 | 771,2 |
| 2 | 2.785.860 | 135.936 | 135.889 | 47 | 129.148 | 6.788 | 0,0002 | -6,95 | 771,8 |
| 3 | 2.785.860 | 135.936 | 135.889 | 47 | 129.148 | 6.788 | 0,0002 | -6,95 | 771,8 |
| 4 | 4.399.240 | 249.285 | 240.581 | 8.704 | 156.313 | 92.972 | 0,0003 | -29,25 | 771,2 |
| 5 | 4.399.240 | 249.285 | 240.581 | 8.704 | 156.313 | 92.972 | 0,0003 | -29,25 | 771,2 |

| C | P | PG | PL | P1 | PX | |
|---|------|--------|------|------|------|-----------------------|
| 1 | 5,4% | 97,7% | 2,3% | 4,0% | 1,4% | 2004 R./2004 Inc. |
| 2 | 4,9% | 100,0% | 0,0% | 4,6% | 0,2% | 1980 R./2004 Inc. |
| 3 | 4,9% | 100,0% | 0,0% | 4,6% | 0,2% | 1980 R./1980 Inc. |
| 4 | 5,7% | 96,5% | 3,5% | 3,6% | 2,1% | 1980 Ext. R/2004 Inc. |
| 5 | 5,7% | 96,5% | 3,5% | 3,6% | 2,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.928.427 | 3.216.490 | 0 | 3.216.490 | 2.831.166 | 385.324 | 0,0008 | 148,10 | 770,9 |
| 2 | 7.088.121 | 627.742 | 0 | 627.742 | 531.595 | 96.147 | 0,0004 | 79,20 | 779,9 |
| 3 | 7.088.121 | 627.742 | 0 | 627.742 | 531.595 | 96.147 | 0,0004 | 79,20 | 779,9 |
| 4 | 7.840.306 | 2.588.748 | 0 | 2.588.748 | 2.299.571 | 289.177 | 0,0008 | 148,10 | 770,9 |
| 5 | 7.840.306 | 2.588.748 | 0 | 2.588.748 | 2.299.571 | 289.177 | 0,0008 | 148,65 | 771,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 21,5% | 0,0% | 100,0% | 19,0% | 2,6% | 2004 R./2004 Inc. |
| 2 | 8,9% | 0,0% | 100,0% | 7,5% | 1,4% | 1980 R./2004 Inc. |
| 3 | 8,9% | 0,0% | 100,0% | 7,5% | 1,4% | 1980 R./1980 Inc. |
| 4 | 33,0% | 0,0% | 100,0% | 29,3% | 3,7% | 1980 Ext. R/2004 Inc. |
| 5 | 33,0% | 0,0% | 100,0% | 29,3% | 3,7% | 1980 Ext./1980 Inc. |

1.23. Table 54D – lubricants, 15 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 15 °C: 801,3 kg/m³ to 1.163,9 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 14.507.626 | 9.230.966 | 3.292.160 | 5.938.806 | 4.613.574 | 4.617.392 | 0,00007 | -39,25 | 804,7 |
| 2 | 12.332.026 | 7.272.992 | 2.330.937 | 4.942.055 | 4.178.474 | 3.094.518 | 0,00006 | -6,70 | 814,2 |
| 3 | 2.465.725 | 1.232.330 | 230.042 | 1.002.288 | 848.006 | 384.324 | 0,00005 | 14,90 | 1.142,0 |
| 4 | 2.175.600 | 1.957.974 | 961.223 | 996.751 | 435.1 | 1.522.874 | 0,00007 | -39,25 | 804,7 |
| 5 | 435 | 391.596 | 192.215 | 199.381 | 87.153 | 304.443 | 0,00006 | -39,45 | 823,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 63,6% | 35,7% | 64,3% | 31,8% | 31,8% | 2004 R./2004 Inc. |
| 2 | 59,0% | 32,0% | 68,0% | 33,9% | 25,1% | 1980 R./2004 Inc. |
| 3 | 50,0% | 18,7% | 81,3% | 34,4% | 15,6% | 1980 R./1980 Inc. |
| 4 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|---------|-----------|---------|--------|---------|
| 1 | 4.713.800 | 4.242.882 | 2.108.026 | 2.134.856 | 942.214 | 3.300.668 | 0,00007 | -39,25 | 804,7 |
| 2 | 2.538.200 | 2.284.908 | 1.146.803 | 1.138.105 | 507.114 | 1.777.794 | 0,00006 | -6,70 | 814,2 |
| 3 | 507,5 | 456.831 | 229.225 | 227.606 | 101.412 | 355.419 | 0,00005 | 14,90 | 1.142,0 |
| 4 | 2.175.600 | 1.957.974 | 961.223 | 996.751 | 435.1 | 1.522.874 | 0,00007 | -39,25 | 804,7 |
| 5 | 435 | 391.596 | 192.215 | 199.381 | 87.153 | 304.443 | 0,00006 | -39,45 | 823,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 50,2% | 49,8% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 50,2% | 49,8% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 9.793.826 | 4.988.084 | 1.184.134 | 3.803.950 | 3.671.360 | 1.316.724 | 0,00005 | 143,95 | 803,8 |
| 2 | 9.793.826 | 4.988.084 | 1.184.134 | 3.803.950 | 3.671.360 | 1.316.724 | 0,00005 | 143,95 | 803,8 |
| 3 | 1.958.225 | 775.499 | 817 | 774.682 | 746.594 | 28.905 | 0,00002 | 102,35 | 971,0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 50,9% | 23,7% | 76,3% | 37,5% | 13,4% | 2004 R./2004 Inc. |
| 2 | 50,9% | 23,7% | 76,3% | 37,5% | 13,4% | 1980 R./2004 Inc. |
| 3 | 39,6% | 0,1% | 99,9% | 38,1% | 1,5% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|---------|---------|---------|---------|------|--------|--------|-------|
| 1 | 14.507.626 | 628.256 | 125.072 | 503.184 | 628.256 | 0 | 0,0001 | 14,80 | 837,1 |
| 2 | 12.332.026 | 535.179 | 87.436 | 447.743 | 535.179 | 0 | 0,0001 | 14,80 | 837,1 |
| 3 | 2.465.725 | 42.955 | 1.604 | 41.351 | 42.955 | 0 | 0,0001 | 14,40 | 837,0 |
| 4 | 2.175.600 | 93.077 | 37.636 | 55.441 | 93.077 | 0 | 0,0001 | -20,05 | 803,3 |
| 5 | 435 | 7.009 | 1.703 | 5.306 | 7.009 | 0 | 0,0001 | -20,05 | 812,5 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 4,3% | 19,9% | 80,1% | 4,3% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,3% | 16,3% | 83,7% | 4,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,7% | 3,7% | 96,3% | 1,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 4,3% | 40,4% | 59,6% | 4,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 24,3% | 75,7% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|--------|---------|------|--------|--------|-------|
| 1 | 4.713.800 | 131.436 | 58.789 | 72.647 | 131.436 | 0 | 0,0001 | 14,80 | 837,1 |
| 2 | 2.538.200 | 38.359 | 21.153 | 17.206 | 38.359 | 0 | 0,0001 | 14,80 | 837,1 |
| 3 | 507.5 | 2.473 | 1.604 | 869 | 2.473 | 0 | 0,0001 | 14,40 | 837,0 |
| 4 | 2.175.600 | 93.077 | 37.636 | 55.441 | 93.077 | 0 | 0,0001 | -20,05 | 803,3 |
| 5 | 435 | 7.009 | 1.703 | 5.306 | 7.009 | 0 | 0,0001 | -20,05 | 812,5 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 2,8% | 44,7% | 55,3% | 2,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,5% | 55,1% | 44,9% | 1,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,5% | 64,9% | 35,1% | 0,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 4,3% | 40,4% | 59,6% | 4,3% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 24,3% | 75,7% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|-----------|--------|------|--------|-------|--------|
| 1 | 9.793.826 | 496.82 | 66.283 | 9.793.826 | 496.82 | 0 | 0,0001 | 35,40 | 821,8 |
| 2 | 9.793.826 | 496.82 | 66.283 | 430.537 | 496.82 | 0 | 0,0001 | 35,40 | 821,8 |
| 3 | 1.958.225 | 40.482 | 0 | 40.482 | 40.482 | 0 | 0,0001 | 62,50 | 1115,0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|--------|------|------|-----------------------|
| 1 | 5,1% | 13,3% | 86,7% | 5,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,1% | 13,3% | 86,7% | 5,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 2,1% | 0,0% | 100,0% | 2,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 14.507.626 | 8.152.218 | 2.112.330 | 6.039.888 | 4.695.560 | 3.456.658 | 0,00006 | -34,75 | 804,2 |
| 2 | 12.332.026 | 6.194.244 | 1.150.991 | 5.043.253 | 4.260.460 | 1.933.784 | 0,00005 | 14,90 | 1.141,6 |
| 3 | 12.332.026 | 6.194.244 | 1.150.991 | 5.043.253 | 4.260.460 | 1.933.784 | 0,00005 | 14,90 | 1.141,6 |
| 4 | 2.175.600 | 1.957.974 | 961.339 | 996.635 | 435.1 | 1.522.874 | 0,00006 | -34,75 | 804,2 |
| 5 | 2.175.600 | 1.957.974 | 961.339 | 996.635 | 435.1 | 1.522.874 | 0,00006 | -34,75 | 804,2 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 56,2% | 25,9% | 74,1% | 32,4% | 23,8% | 2004 R./2004 Inc. |
| 2 | 50,2% | 18,6% | 81,4% | 34,5% | 15,7% | 1980 R./2004 Inc. |
| 3 | 50,2% | 18,6% | 81,4% | 34,5% | 15,7% | 1980 R./1980 Inc. |
| 4 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|---------|-----------|---------|--------|---------|
| 1 | 4.713.800 | 4.242.882 | 2.108.537 | 2.134.345 | 942.214 | 3.300.668 | 0,00006 | -34,75 | 804,2 |
| 2 | 2.538.200 | 2.284.908 | 1.147.198 | 1.137.710 | 507.114 | 1.777.794 | 0,00005 | 14,90 | 1.141,6 |
| 3 | 2.538.200 | 2.284.908 | 1.147.198 | 1.137.710 | 507.114 | 1.777.794 | 0,00005 | 14,90 | 1.141,6 |
| 4 | 2.175.600 | 1.957.974 | 961.339 | 996.635 | 435.1 | 1.522.874 | 0,00006 | -34,75 | 804,2 |
| 5 | 2.175.600 | 1.957.974 | 961.339 | 996.635 | 435.1 | 1.522.874 | 0,00006 | -34,75 | 804,2 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 50,2% | 49,8% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 50,2% | 49,8% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 49,1% | 50,9% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-------|-----------|-----------|--------|---------|--------|--------|
| 1 | 9.793.826 | 3.909.336 | 3.793 | 3.905.543 | 3.753.346 | 155.99 | 0,00002 | 101,40 | 1151,4 |
| 2 | 9.793.826 | 3.909.336 | 3.793 | 3.905.543 | 3.753.346 | 155.99 | 0,00002 | 101,40 | 1151,4 |
| 3 | 9.793.826 | 3.909.336 | 3.793 | 3.905.543 | 3.753.346 | 155.99 | 0,00002 | 101,40 | 1151,4 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|-------|-------|------|-----------------------|
| 1 | 39,9% | 0,1% | 99,9% | 38,3% | 1,6% | 2004 R./2004 Inc. |
| 2 | 39,9% | 0,1% | 99,9% | 38,3% | 1,6% | 1980 R./2004 Inc. |
| 3 | 39,9% | 0,1% | 99,9% | 38,3% | 1,6% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|---------|--------|---------|---------|------|--------|--------|---------|
| 1 | 14.507.626 | 256.638 | 17.438 | 239.2 | 256.638 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 2 | 12.332.026 | 221.213 | 8.57 | 212.643 | 221.213 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 3 | 12.332.026 | 221.213 | 8.57 | 212.643 | 221.213 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 4 | 2.175.600 | 35.425 | 8.868 | 26.557 | 35.425 | 0 | 0,0001 | -20,05 | 803,4 |
| 5 | 2.175.600 | 35.425 | 8.868 | 26.557 | 35.425 | 0 | 0,0001 | -20,05 | 803,4 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,8% | 6,8% | 93,2% | 1,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,8% | 3,9% | 96,1% | 1,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | 1,8% | 3,9% | 96,1% | 1,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,6% | 25,0% | 75,0% | 1,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 25,0% | 75,0% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|--------|--------|--------|------|--------|--------|---------|
| 1 | 4.713.800 | 48.223 | 17.438 | 30.785 | 48.223 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 2 | 2.538.200 | 12.798 | 8.57 | 4.228 | 12.798 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 3 | 2.538.200 | 12.798 | 8.57 | 4.228 | 12.798 | 0 | 0,0001 | 14,75 | 1.046,3 |
| 4 | 2.175.600 | 35.425 | 8.868 | 26.557 | 35.425 | 0 | 0,0001 | -20,05 | 803,4 |
| 5 | 2.175.600 | 35.425 | 8.868 | 26.557 | 35.425 | 0 | 0,0001 | -20,05 | 803,4 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,0% | 36,2% | 63,8% | 1,0% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,5% | 67,0% | 33,0% | 0,5% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,5% | 67,0% | 33,0% | 0,5% | 0,0% | 1980 R./1980 Inc. |
| 4 | 1,6% | 25,0% | 75,0% | 1,6% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 1,6% | 25,0% | 75,0% | 1,6% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-----|---------|------|--------|-------|--------|---------|
| 1 | 9.793.826 | 208.415 | 0 | 208.415 | 0 | 0,0001 | 61,70 | 1151,4 | 208.415 |
| 2 | 9.793.826 | 208.415 | 0 | 208.415 | 0 | 0,0001 | 61,70 | 1151,4 | 208.415 |
| 3 | 9.793.826 | 208.415 | 0 | 208.415 | 0 | 0,0001 | 61,70 | 1151,4 | 208.415 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 | 0 |

| C | P | PG | PL | P1 | PX | |
|---|------|------|--------|------|------|-----------------------|
| 1 | 2,1% | 0,0% | 100,0% | 2,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 2,1% | 0,0% | 100,0% | 2,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 2,1% | 0,0% | 100,0% | 2,1% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

1.24. Table 60A – crude oil, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 20 °C: 606,1 kg/m³ to 1.161,2 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.205.550 | 18.331.197 | 4.501.549 | 13.829.648 | 4.663.714 | 13.667.483 | 0,00039 | 148,60 | 616,3 |
| 2 | 8.268.785 | 6.304.790 | 1.295.656 | 5.009.134 | 2.130.824 | 4.173.966 | 0,00011 | 115,50 | 834,8 |
| 3 | 1.653.757 | 1.403.076 | 245.777 | 1.157.299 | 471.641 | 931.435 | 0,00007 | -6,20 | 754,5 |
| 4 | 13.936.765 | 12.026.407 | 3.205.893 | 8.820.514 | 2.532.890 | 9.493.517 | 0,00039 | 148,60 | 616,3 |
| 5 | 2.787.353 | 2.544.391 | 628.776 | 1.915.615 | 470.783 | 2.073.608 | 0,00025 | 148,20 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 82,6% | 24,6% | 75,4% | 21,0% | 61,5% | 2004 R./2004 Inc. |
| 2 | 76,2% | 20,6% | 79,4% | 25,8% | 50,5% | 1980 R./2004 Inc. |
| 3 | 84,8% | 17,5% | 82,5% | 28,5% | 56,3% | 1980 R./1980 Inc. |
| 4 | 86,3% | 26,7% | 73,3% | 18,2% | 68,1% | 1980 Ext. R/2004 Inc. |
| 5 | 91,3% | 24,7% | 75,3% | 16,9% | 74,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.770.000 | 7.021.292 | 4.343.841 | 2.677.451 | 1.487.860 | 5.533.432 | 0,00016 | -42,10 | 616,3 |
| 2 | 2.420.600 | 2.178.693 | 1.228.498 | 950.195 | 483.989 | 1.694.704 | 0,00009 | -11,55 | 754,8 |
| 3 | 484.12 | 435.826 | 245.777 | 190.049 | 96.939 | 338.887 | 0,00007 | -6,20 | 754,5 |
| 4 | 5.349.400 | 4.842.599 | 3.115.343 | 1.727.256 | 1.003.871 | 3.838.728 | 0,00016 | -42,10 | 616,3 |
| 5 | 1.069.880 | 962.927 | 628.776 | 334.151 | 212.992 | 749.935 | 0,00010 | -33,50 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,4% | 61,9% | 38,1% | 19,1% | 71,2% | 2004 R./2004 Inc. |
| 2 | 90,0% | 56,4% | 43,6% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 56,4% | 43,6% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,5% | 64,3% | 35,7% | 18,8% | 71,8% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 65,3% | 34,7% | 19,9% | 70,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|---------|------------|-----------|-----------|---------|--------|-------|
| 1 | 14.435.550 | 11.309.905 | 157.708 | 11.152.197 | 3.175.854 | 8.134.051 | 0,00039 | 148,60 | 616,3 |
| 2 | 5.848.185 | 4.126.097 | 67.158 | 4.058.939 | 1.646.835 | 2.479.262 | 0,00011 | 115,50 | 834,8 |
| 3 | 1.169.637 | 967.25 | 0 | 967.25 | 374.702 | 592.548 | 0,00007 | 117,15 | 838,0 |
| 4 | 8.587.365 | 7.183.808 | 90.55 | 7.093.258 | 1.529.019 | 5.654.789 | 0,00039 | 148,60 | 616,3 |
| 5 | 1.717.473 | 1.581.464 | 0 | 1.581.464 | 257.791 | 1.323.673 | 0,00025 | 148,20 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 78,3% | 1,4% | 98,6% | 22,0% | 56,3% | 2004 R./2004 Inc. |
| 2 | 70,6% | 1,6% | 98,4% | 28,2% | 42,4% | 1980 R./2004 Inc. |
| 3 | 82,7% | 0,0% | 100,0% | 32,0% | 50,7% | 1980 R./1980 Inc. |
| 4 | 83,7% | 1,3% | 98,7% | 17,8% | 65,9% | 1980 Ext. R/2004 Inc. |
| 5 | 92,1% | 0,0% | 100,0% | 15,0% | 77,1% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|---------|
| 1 | 22.205.550 | 5.280.451 | 936.264 | 4.344.187 | 4.723.798 | 556.653 | 0,0004 | 124,50 | 615,3 |
| 2 | 8.268.785 | 1.078.882 | 143.403 | 935.479 | 1.078.876 | 6 | 0,0002 | 116,90 | 837,8 |
| 3 | 1.653.757 | 213.585 | 27.682 | 185.903 | 213.585 | 0 | 0,0001 | 19,75 | 1.011,0 |
| 4 | 13.936.765 | 4.201.569 | 792.861 | 3.408.708 | 3.644.922 | 556.647 | 0,0004 | 124,50 | 615,3 |
| 5 | 2.787.353 | 880.773 | 147.403 | 733.37 | 815.142 | 65.631 | 0,0003 | 129,90 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 23,8% | 17,7% | 82,3% | 21,3% | 2,5% | 2004 R./2004 Inc. |
| 2 | 13,0% | 13,3% | 86,7% | 13,0% | 0,0% | 1980 R./2004 Inc. |
| 3 | 12,9% | 13,0% | 87,0% | 12,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 30,1% | 18,9% | 81,1% | 26,2% | 4,0% | 1980 Ext. R/2004 Inc. |
| 5 | 31,6% | 16,7% | 83,3% | 29,2% | 2,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|--------|---------|------|--------|--------|---------|
| 1 | 7.770.000 | 993.07 | 934.153 | 58.917 | 992.92 | 150 | 0,0002 | -36,90 | 615,3 |
| 2 | 2.420.600 | 147.34 | 143.012 | 4.328 | 147.34 | 0 | 0,0001 | 19,95 | 782,8 |
| 3 | 484.12 | 27.682 | 27.682 | 0 | 27.682 | 0 | 0,0001 | 19,75 | 1.011,0 |
| 4 | 5.349.400 | 845.73 | 791.141 | 54.589 | 845.58 | 150 | 0,0002 | -36,90 | 615,3 |
| 5 | 1.069.880 | 147.403 | 147.403 | 0 | 147.403 | 0 | 0,0001 | 19,80 | 700,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 12,8% | 94,1% | 5,9% | 12,8% | 0,0% | 2004 R./2004 Inc. |
| 2 | 6,1% | 97,1% | 2,9% | 6,1% | 0,0% | 1980 R./2004 Inc. |
| 3 | 5,7% | 100,0% | 0,0% | 5,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 15,8% | 93,5% | 6,5% | 15,8% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 13,8% | 100,0% | 0,0% | 13,8% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-------|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.435.550 | 4.287.381 | 2.111 | 4.285.270 | 3.730.878 | 556.503 | 0,0004 | 124,50 | 615,3 |
| 2 | 5.848.185 | 931.542 | 391 | 931.151 | 931.536 | 6 | 0,0002 | 116,90 | 837,8 |
| 3 | 1.169.637 | 185.903 | 0 | 185.903 | 185.903 | 0 | 0,0001 | 27,45 | 754,0 |
| 4 | 8.587.365 | 3.355.839 | 1.72 | 3.354.119 | 2.799.342 | 556.497 | 0,0004 | 124,50 | 615,3 |
| 5 | 1.717.473 | 733.37 | 0 | 733.37 | 667.739 | 65.631 | 0,0003 | 129,90 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 29,7% | 0,0% | 100,0% | 25,8% | 3,9% | 2004 R./2004 Inc. |
| 2 | 15,9% | 0,0% | 100,0% | 15,9% | 0,0% | 1980 R./2004 Inc. |
| 3 | 15,9% | 0,0% | 100,0% | 15,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 39,1% | 0,1% | 99,9% | 32,6% | 6,5% | 1980 Ext. R/2004 Inc. |
| 5 | 42,7% | 0,0% | 100,0% | 38,9% | 3,8% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.205.550 | 19.739.168 | 4.371.309 | 15.367.859 | 4.706.378 | 15.032.790 | 0,00025 | 147,45 | 616,3 |
| 2 | 8.264.463 | 7.011.349 | 1.226.979 | 5.784.370 | 2.355.651 | 4.655.698 | 0,00007 | -4,85 | 754,1 |
| 3 | 8.264.463 | 7.011.349 | 1.226.979 | 5.784.370 | 2.355.651 | 4.655.698 | 0,00007 | -4,85 | 754,1 |
| 4 | 13.941.087 | 12.727.819 | 3.144.330 | 9.583.489 | 2.350.727 | 10.377.092 | 0,00025 | 147,45 | 616,3 |
| 5 | 13.941.087 | 12.727.819 | 3.144.330 | 9.583.489 | 2.350.727 | 10.377.092 | 0,00025 | 147,45 | 616,3 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 88,9% | 22,1% | 77,9% | 21,2% | 67,7% | 2004 R./2004 Inc. |
| 2 | 84,8% | 17,5% | 82,5% | 28,5% | 56,3% | 1980 R./2004 Inc. |
| 3 | 84,8% | 17,5% | 82,5% | 28,5% | 56,3% | 1980 R./1980 Inc. |
| 4 | 91,3% | 24,7% | 75,3% | 16,9% | 74,4% | 1980 Ext. R/2004 Inc. |
| 5 | 91,3% | 24,7% | 75,3% | 16,9% | 74,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.770.000 | 6.993.758 | 4.371.309 | 2.622.449 | 1.548.771 | 5.444.987 | 0,00010 | -31,50 | 616,4 |
| 2 | 2.419.080 | 2.177.317 | 1.226.979 | 950.338 | 483.709 | 1.693.608 | 0,00007 | -4,85 | 754,1 |
| 3 | 2.419.080 | 2.177.317 | 1.226.979 | 950.338 | 483.709 | 1.693.608 | 0,00007 | -4,85 | 754,1 |
| 4 | 5.350.920 | 4.816.441 | 3.144.330 | 1.672.111 | 1.065.062 | 3.751.379 | 0,00010 | -31,50 | 616,4 |
| 5 | 5.350.920 | 4.816.441 | 3.144.330 | 1.672.111 | 1.065.062 | 3.751.379 | 0,00010 | -31,50 | 616,4 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 62,5% | 37,5% | 19,9% | 70,1% | 2004 R./2004 Inc. |
| 2 | 90,0% | 56,4% | 43,6% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 56,4% | 43,6% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 65,3% | 34,7% | 19,9% | 70,1% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 65,3% | 34,7% | 19,9% | 70,1% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----|------------|-----------|-----------|---------|--------|-------|
| 1 | 14.435.550 | 12.745.410 | 0 | 12.745.410 | 3.157.607 | 9.587.803 | 0,00025 | 147,45 | 616,3 |
| 2 | 5.845.383 | 4.834.032 | 0 | 4.834.032 | 1.871.942 | 2.962.090 | 0,00007 | 114,45 | 837,7 |
| 3 | 5.845.383 | 4.834.032 | 0 | 4.834.032 | 1.871.942 | 2.962.090 | 0,00007 | 114,45 | 837,7 |
| 4 | 8.590.167 | 7.911.378 | 0 | 7.911.378 | 1.285.665 | 6.625.713 | 0,00025 | 147,45 | 616,3 |
| 5 | 8.590.167 | 7.911.378 | 0 | 7.911.378 | 1.285.665 | 6.625.713 | 0,00025 | 148,20 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 88,3% | 0,0% | 100,0% | 21,9% | 66,4% | 2004 R./2004 Inc. |
| 2 | 82,7% | 0,0% | 100,0% | 32,0% | 50,7% | 1980 R./2004 Inc. |
| 3 | 82,7% | 0,0% | 100,0% | 32,0% | 50,7% | 1980 R./1980 Inc. |
| 4 | 92,1% | 0,0% | 100,0% | 15,0% | 77,1% | 1980 Ext. R/2004 Inc. |
| 5 | 92,1% | 0,0% | 100,0% | 15,0% | 77,1% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.205.550 | 5.467.417 | 874.058 | 4.593.359 | 5.136.439 | 330.978 | 0,0003 | 128,70 | 616,3 |
| 2 | 8.264.463 | 1.063.452 | 137.849 | 925.603 | 1.063.452 | 0 | 0,0001 | 19,95 | 782,8 |
| 3 | 8.264.463 | 1.063.452 | 137.849 | 925.603 | 1.063.452 | 0 | 0,0001 | 19,95 | 782,8 |
| 4 | 13.941.087 | 4.403.965 | 736.209 | 3.667.756 | 4.072.987 | 330.978 | 0,0003 | 128,70 | 616,3 |
| 5 | 13.941.087 | 4.403.965 | 736.209 | 3.667.756 | 4.072.987 | 330.978 | 0,0003 | 128,70 | 616,3 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 24,6% | 16,0% | 84,0% | 23,1% | 1,5% | 2004 R./2004 Inc. |
| 2 | 12,9% | 13,0% | 87,0% | 12,9% | 0,0% | 1980 R./2004 Inc. |
| 3 | 12,9% | 13,0% | 87,0% | 12,9% | 0,0% | 1980 R./1980 Inc. |
| 4 | 31,6% | 16,7% | 83,3% | 29,2% | 2,4% | 1980 Ext. R/2004 Inc. |
| 5 | 31,6% | 16,7% | 83,3% | 29,2% | 2,4% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|-----|---------|------|--------|-------|-------|
| 1 | 7.770.000 | 874.058 | 874.058 | 0 | 874.058 | 0 | 0,0001 | 19,95 | 782,8 |
| 2 | 2.419.080 | 137.849 | 137.849 | 0 | 137.849 | 0 | 0,0001 | 19,95 | 782,8 |
| 3 | 2.419.080 | 137.849 | 137.849 | 0 | 137.849 | 0 | 0,0001 | 19,95 | 782,8 |
| 4 | 5.350.920 | 736.209 | 736.209 | 0 | 736.209 | 0 | 0,0001 | 19,90 | 638,8 |
| 5 | 5.350.920 | 736.209 | 736.209 | 0 | 736.209 | 0 | 0,0001 | 19,90 | 638,8 |

| C | P | PG | PL | P1 | PX | |
|---|-------|--------|------|-------|------|-----------------------|
| 1 | 11,2% | 100,0% | 0,0% | 11,2% | 0,0% | 2004 R./2004 Inc. |
| 2 | 5,7% | 100,0% | 0,0% | 5,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 5,7% | 100,0% | 0,0% | 5,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 13,8% | 100,0% | 0,0% | 13,8% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 13,8% | 100,0% | 0,0% | 13,8% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.435.550 | 4.593.359 | 0 | 4.593.359 | 4.262.381 | 330.978 | 0,0003 | 128,70 | 616,3 |
| 2 | 5.845.383 | 925.603 | 0 | 925.603 | 925.603 | 0 | 0,0001 | 27,45 | 754,0 |
| 3 | 5.845.383 | 925.603 | 0 | 925.603 | 925.603 | 0 | 0,0001 | 27,45 | 754,0 |
| 4 | 8.590.167 | 3.667.756 | 0 | 3.667.756 | 3.336.778 | 330.978 | 0,0003 | 128,70 | 616,3 |
| 5 | 8.590.167 | 3.667.756 | 0 | 3.667.756 | 3.336.778 | 330.978 | 0,0003 | 129,90 | 616,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 31,8% | 0,0% | 100,0% | 29,5% | 2,3% | 2004 R./2004 Inc. |
| 2 | 15,8% | 0,0% | 100,0% | 15,8% | 0,0% | 1980 R./2004 Inc. |
| 3 | 15,8% | 0,0% | 100,0% | 15,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 42,7% | 0,0% | 0,0% | 38,8% | 3,9% | 1980 Ext. R/2004 Inc. |
| 5 | 42,7% | 0,0% | 0,0% | 38,8% | 3,9% | 1980 Ext./1980 Inc. |

1.25. Table 60B – products, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 20 °C: 611,2 kg/m³ to 1.160,6 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.185.545 | 16.920.807 | 4.948.001 | 11.972.806 | 5.549.683 | 11.371.124 | 0,00105 | 149,90 | 768,3 |
| 2 | 9.904.835 | 6.802.504 | 2.119.471 | 4.683.033 | 2.876.496 | 3.926.008 | 0,00052 | 89,10 | 776,3 |
| 3 | 1.980.967 | 1.375.950 | 320.456 | 1.055.494 | 697.496 | 678.454 | 0,00036 | 88,45 | 776,5 |
| 4 | 12.280.710 | 10.118.303 | 2.828.530 | 7.289.773 | 2.673.187 | 7.445.116 | 0,00105 | 149,90 | 768,3 |
| 5 | 2.456.142 | 2.124.916 | 454.327 | 1.670.589 | 568.955 | 1.555.961 | 0,00074 | 149,25 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 76,3% | 29,2% | 70,8% | 25,0% | 51,3% | 2004 R./2004 Inc. |
| 2 | 68,7% | 31,2% | 68,8% | 29,0% | 39,6% | 1980 R./2004 Inc. |
| 3 | 69,5% | 23,3% | 76,7% | 35,2% | 34,2% | 1980 R./1980 Inc. |
| 4 | 82,4% | 28,0% | 72,0% | 21,8% | 60,6% | 1980 Ext. R/2004 Inc. |
| 5 | 86,5% | 21,4% | 78,6% | 23,2% | 63,3% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.763.000 | 7.010.582 | 3.871.143 | 3.139.439 | 1.497.423 | 5.513.159 | 0,00053 | -49,90 | 768,3 |
| 2 | 3.218.600 | 2.905.870 | 1.599.234 | 1.306.636 | 625.861 | 2.280.009 | 0,00032 | -17,95 | 768,3 |
| 3 | 643.72 | 581.389 | 320.45 | 260.939 | 125.091 | 456.298 | 0,00024 | -17,95 | 768,5 |
| 4 | 4.544.400 | 4.104.712 | 2.271.909 | 1.832.803 | 871.562 | 3.233.150 | 0,00053 | -49,90 | 768,3 |
| 5 | 908.88 | 820.374 | 454.327 | 366.047 | 177.313 | 643.061 | 0,00038 | -49,90 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,3% | 55,2% | 44,8% | 19,3% | 71,0% | 2004 R./2004 Inc. |
| 2 | 90,3% | 55,0% | 45,0% | 19,4% | 70,8% | 1980 R./2004 Inc. |
| 3 | 90,3% | 55,1% | 44,9% | 19,4% | 70,9% | 1980 R./1980 Inc. |
| 4 | 90,3% | 55,3% | 44,7% | 19,2% | 71,1% | 1980 Ext. R/2004 Inc. |
| 5 | 90,3% | 55,4% | 44,6% | 19,5% | 70,8% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 14.422.545 | 9.910.225 | 1.076.858 | 8.833.367 | 4.052.260 | 5.857.965 | 0,00105 | 149,90 | 768,3 |
| 2 | 6.686.235 | 3.896.634 | 520.237 | 3.376.397 | 2.250.635 | 1.645.999 | 0,00052 | 89,10 | 776,3 |
| 3 | 1.337.247 | 794.561 | 6 | 794.555 | 572.405 | 222.156 | 0,00036 | 88,45 | 776,5 |
| 4 | 7.736.310 | 6.013.591 | 556.621 | 5.456.970 | 1.801.625 | 4.211.966 | 0,00105 | 149,90 | 768,3 |
| 5 | 1.547.262 | 1.304.542 | 0 | 1.304.542 | 391.642 | 912.9 | 0,00074 | 149,25 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|--------|-------|-------|-----------------------|
| 1 | 68,7% | 10,9% | 89,1% | 28,1% | 40,6% | 2004 R./2004 Inc. |
| 2 | 58,3% | 13,4% | 86,6% | 33,7% | 24,6% | 1980 R./2004 Inc. |
| 3 | 59,4% | 0,0% | 100,0% | 42,8% | 16,6% | 1980 R./1980 Inc. |
| 4 | 77,7% | 9,3% | 90,7% | 23,3% | 54,4% | 1980 Ext. R/2004 Inc. |
| 5 | 84,3% | 0,0% | 100,0% | 25,3% | 59,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|---------|-----------|-----------|---------|--------|--------|-------|
| 1 | 22.185.545 | 3.934.610 | 684.845 | 3.249.765 | 3.288.632 | 645.978 | 0,0011 | 145,10 | 768,3 |
| 2 | 9.904.835 | 915.411 | 226.896 | 688.515 | 821.631 | 93.78 | 0,0006 | 88,20 | 776,3 |
| 3 | 1.980.967 | 150.535 | 36.764 | 113.771 | 131.443 | 19.092 | 0,0004 | 79,65 | 776,5 |
| 4 | 12.280.710 | 3.019.199 | 457.949 | 2.561.250 | 2.467.001 | 552.198 | 0,0011 | 145,10 | 768,3 |
| 5 | 2.456.142 | 568.475 | 58.841 | 509.634 | 488.036 | 80.439 | 0,0008 | 145,10 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 17,7% | 17,4% | 82,6% | 14,8% | 2,9% | 2004 R./2004 Inc. |
| 2 | 9,2% | 24,8% | 75,2% | 8,3% | 0,9% | 1980 R./2004 Inc. |
| 3 | 7,6% | 24,4% | 75,6% | 6,6% | 1,0% | 1980 R./1980 Inc. |
| 4 | 24,6% | 15,2% | 84,8% | 20,1% | 4,5% | 1980 Ext. R/2004 Inc. |
| 5 | 23,1% | 10,4% | 89,6% | 19,9% | 3,3% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|---------|---------|--------|--------|-------|
| 1 | 7.763.000 | 791.57 | 622.226 | 169.344 | 688.983 | 102.587 | 0,0005 | -38,00 | 768,3 |
| 2 | 3.218.600 | 230.429 | 203.933 | 26.496 | 209.846 | 20.583 | 0,0003 | -7,65 | 768,3 |
| 3 | 643.72 | 36.902 | 36.764 | 138 | 33.857 | 3.045 | 0,0002 | -0,65 | 768,5 |
| 4 | 4.544.400 | 561.141 | 418.293 | 142.848 | 479.137 | 82.004 | 0,0005 | -38,00 | 768,3 |
| 5 | 908.88 | 62.089 | 58.841 | 3.248 | 41.58 | 20.509 | 0,0004 | -44,30 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 10,2% | 78,6% | 21,4% | 8,9% | 1,3% | 2004 R./2004 Inc. |
| 2 | 7,2% | 88,5% | 11,5% | 6,5% | 0,6% | 1980 R./2004 Inc. |
| 3 | 5,7% | 99,6% | 0,4% | 5,3% | 0,5% | 1980 R./1980 Inc. |
| 4 | 12,3% | 74,5% | 25,5% | 10,5% | 1,8% | 1980 Ext. R/2004 Inc. |
| 5 | 6,8% | 94,8% | 5,2% | 4,6% | 2,3% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|--------|-----------|-----------|---------|--------|--------|-------|
| 1 | 14.422.545 | 3.143.040 | 62.619 | 3.080.421 | 2.599.649 | 543.391 | 0,0011 | 145,10 | 768,3 |
| 2 | 6.686.235 | 684.982 | 22.963 | 662.019 | 611.785 | 73.197 | 0,0006 | 88,20 | 776,3 |
| 3 | 1.337.247 | 113.633 | 0 | 113.633 | 97.586 | 16.047 | 0,0004 | 79,65 | 776,5 |
| 4 | 7.736.310 | 2.458.058 | 39.656 | 2.418.402 | 1.987.864 | 470.194 | 0,0011 | 145,10 | 768,3 |
| 5 | 1.547.262 | 506.386 | 0 | 506.386 | 446.456 | 59.93 | 0,0008 | 145,10 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 21,8% | 2,0% | 98,0% | 18,0% | 3,8% | 2004 R./2004 Inc. |
| 2 | 10,2% | 3,4% | 96,6% | 9,1% | 1,1% | 1980 R./2004 Inc. |
| 3 | 8,5% | 0,0% | 100,0% | 7,3% | 1,2% | 1980 R./1980 Inc. |
| 4 | 31,8% | 1,6% | 98,4% | 25,7% | 6,1% | 1980 Ext. R/2004 Inc. |
| 5 | 32,7% | 0,0% | 100,0% | 28,9% | 3,9% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----------|------------|-----------|------------|---------|--------|-------|
| 1 | 22.185.545 | 17.535.893 | 3.872.586 | 13.663.307 | 6.343.805 | 11.192.088 | 0,00074 | 149,25 | 768,5 |
| 2 | 9.905.557 | 6.872.039 | 1.601.381 | 5.270.658 | 3.473.464 | 3.398.575 | 0,00036 | 88,45 | 776,5 |
| 3 | 9.905.557 | 6.872.039 | 1.601.381 | 5.270.658 | 3.473.464 | 3.398.575 | 0,00036 | 88,45 | 776,5 |
| 4 | 12.279.988 | 10.663.854 | 2.271.205 | 8.392.649 | 2.870.341 | 7.793.513 | 0,00074 | 149,25 | 768,5 |
| 5 | 12.279.988 | 10.663.854 | 2.271.205 | 8.392.649 | 2.870.341 | 7.793.513 | 0,00074 | 149,25 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 79,0% | 22,1% | 77,9% | 28,6% | 50,4% | 2004 R./2004 Inc. |
| 2 | 69,4% | 23,3% | 76,7% | 35,1% | 34,3% | 1980 R./2004 Inc. |
| 3 | 69,4% | 23,3% | 76,7% | 35,1% | 34,3% | 1980 R./1980 Inc. |
| 4 | 86,8% | 21,3% | 78,7% | 23,4% | 63,5% | 1980 Ext. R/2004 Inc. |
| 5 | 86,8% | 21,3% | 78,7% | 23,4% | 63,5% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|-------|
| 1 | 7.763.000 | 7.008.503 | 3.872.561 | 3.135.942 | 1.510.040 | 5.498.463 | 0,00038 | -49,85 | 768,3 |
| 2 | 3.220.120 | 2.908.096 | 1.601.358 | 1.306.738 | 624.609 | 2.283.487 | 0,00024 | -17,95 | 768,5 |
| 3 | 3.220.120 | 2.908.096 | 1.601.358 | 1.306.738 | 624.609 | 2.283.487 | 0,00024 | -17,95 | 768,5 |
| 4 | 4.542.880 | 4.100.407 | 2.271.203 | 1.829.204 | 885.431 | 3.214.976 | 0,00038 | -49,85 | 768,3 |
| 5 | 4.542.880 | 4.100.407 | 2.271.203 | 1.829.204 | 885.431 | 3.214.976 | 0,00038 | -49,85 | 768,3 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,3% | 55,3% | 44,7% | 19,5% | 70,8% | 2004 R./2004 Inc. |
| 2 | 90,3% | 55,1% | 44,9% | 19,4% | 70,9% | 1980 R./2004 Inc. |
| 3 | 90,3% | 55,1% | 44,9% | 19,4% | 70,9% | 1980 R./1980 Inc. |
| 4 | 90,3% | 55,4% | 44,6% | 19,5% | 70,8% | 1980 Ext. R/2004 Inc. |
| 5 | 90,3% | 55,4% | 44,6% | 19,5% | 70,8% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|------------|-----|------------|-----------|-----------|---------|--------|-------|
| 1 | 14.422.545 | 10.527.390 | 25 | 10.527.365 | 4.833.765 | 5.693.625 | 0,00074 | 149,25 | 768,5 |
| 2 | 6.685.437 | 3.963.943 | 23 | 3.963.920 | 2.848.855 | 1.115.088 | 0,00036 | 88,45 | 776,5 |
| 3 | 6.685.437 | 3.963.943 | 23 | 3.963.920 | 2.848.855 | 1.115.088 | 0,00036 | 88,45 | 776,5 |
| 4 | 7.737.108 | 6.563.447 | 2 | 6.563.445 | 1.984.910 | 4.578.537 | 0,00074 | 149,25 | 768,5 |
| 5 | 7.737.108 | 6.563.447 | 2 | 6.563.445 | 1.984.910 | 4.578.537 | 0,00074 | 149,25 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|-------|-----------------------|
| 1 | 73,0% | 0,0% | 100,0% | 33,5% | 39,5% | 2004 R./2004 Inc. |
| 2 | 59,3% | 0,0% | 100,0% | 42,6% | 16,7% | 1980 R./2004 Inc. |
| 3 | 59,3% | 0,0% | 100,0% | 42,6% | 16,7% | 1980 R./1980 Inc. |
| 4 | 84,8% | 0,0% | 100,0% | 25,7% | 59,2% | 1980 Ext. R/2004 Inc. |
| 5 | 84,8% | 0,0% | 100,0% | 25,7% | 59,2% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|----------|--------|----------|----------|---------|--------|--------|-------|
| 1 | 22.185.54 | 3.593.04 | 478.31 | 3.114.73 | 3.095.08 | 497.962 | 0,0008 | 145,10 | 768,5 |
| 2 | 9.905.557 | 747.684 | 183.57 | 564.113 | 653.429 | 94.255 | 0,0004 | 79,65 | 776,5 |
| 3 | 9.905.557 | 747.684 | 183.57 | 564.113 | 653.429 | 94.255 | 0,0004 | 79,65 | 776,5 |
| 4 | 12.279.98 | 2.845.36 | 294.74 | 2.550.62 | 2.441.65 | 403.707 | 0,0008 | 145,10 | 768,5 |
| 5 | 12.279.98 | 2.845.36 | 294.74 | 2.550.62 | 2.441.65 | 403.707 | 0,0008 | 145,10 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|------|-----------------------|
| 1 | 16,2% | 13,3% | 86,7% | 14,0% | 2,2% | 2004 R./2004 Inc. |
| 2 | 7,5% | 24,6% | 75,4% | 6,6% | 1,0% | 1980 R./2004 Inc. |
| 3 | 7,5% | 24,6% | 75,4% | 6,6% | 1,0% | 1980 R./1980 Inc. |
| 4 | 23,2% | 10,4% | 89,6% | 19,9% | 3,3% | 1980 Ext. R/2004 Inc. |
| 5 | 23,2% | 10,4% | 89,6% | 19,9% | 3,3% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|--------|---------|---------|--------|--------|-------|
| 1 | 7.763.000 | 494.951 | 478.31 | 16.644 | 377.197 | 117.754 | 0,0004 | -43,80 | 768,3 |
| 2 | 3.220.120 | 184.248 | 183.57 | 677 | 169.462 | 14.786 | 0,0002 | -0,25 | 768,3 |
| 3 | 3.220.120 | 184.248 | 183.57 | 677 | 169.462 | 14.786 | 0,0002 | -0,25 | 768,3 |
| 4 | 4.542.880 | 310.703 | 294.74 | 15.967 | 207.735 | 102.968 | 0,0004 | -43,80 | 768,3 |
| 5 | 4.542.880 | 310.703 | 294.74 | 15.967 | 207.735 | 102.968 | 0,0004 | -43,80 | 768,3 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|------|------|------|-----------------------|
| 1 | 6,4% | 96,6% | 3,4% | 4,9% | 1,5% | 2004 R./2004 Inc. |
| 2 | 5,7% | 99,6% | 0,4% | 5,3% | 0,5% | 1980 R./2004 Inc. |
| 3 | 5,7% | 99,6% | 0,4% | 5,3% | 0,5% | 1980 R./1980 Inc. |
| 4 | 6,8% | 94,9% | 5,1% | 4,6% | 2,3% | 1980 Ext. R/2004 Inc. |
| 5 | 6,8% | 94,9% | 5,1% | 4,6% | 2,3% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|----------|-----|----------|----------|---------|--------|--------|-------|
| 1 | 14.422.54 | 3.098.09 | 0 | 3.098.09 | 2.717.88 | 380.208 | 0,0008 | 145,10 | 768,5 |
| 2 | 6.685.437 | 563.436 | 0 | 563.436 | 483.967 | 79.469 | 0,0004 | 79,65 | 776,5 |
| 3 | 6.685.437 | 563.436 | 0 | 563.436 | 483.967 | 79.469 | 0,0004 | 79,65 | 776,5 |
| 4 | 7.737.108 | 2.534.65 | 0 | 2.534.65 | 2.233.91 | 300.739 | 0,0008 | 145,10 | 768,5 |
| 5 | 7.737.108 | 2.534.65 | 0 | 2.534.65 | 2.233.91 | 300.739 | 0,0008 | 145,10 | 768,5 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|--------|-------|------|-----------------------|
| 1 | 21,5% | 0,0% | 100,0% | 18,8% | 2,6% | 2004 R./2004 Inc. |
| 2 | 8,4% | 0,0% | 100,0% | 7,2% | 1,2% | 1980 R./2004 Inc. |
| 3 | 8,4% | 0,0% | 100,0% | 7,2% | 1,2% | 1980 R./1980 Inc. |
| 4 | 32,8% | 0,0% | 100,0% | 28,9% | 3,9% | 1980 Ext. R/2004 Inc. |
| 5 | 32,8% | 0,0% | 100,0% | 28,9% | 3,9% | 1980 Ext./1980 Inc. |

1.26. Table 60D – lubricants, 20 °C base temperature – detailed results

Comparison grid:

Observed temperature: -50 °C to 150 °C, increment 0,05 °C

Base density @ 20 °C: 798,1 kg/m³ to 1.160,7 kg/m³, increment 0,1 kg/m³

Quantity compared: Volume correction factor observed to base (5 & 4 decimals rounding)

Absolute numbers:

NSC: Number of successful calculations (may be smaller than calculated grid points)

NDF: Number of deviations found

NDG: Number of deviations where 2004 result lies above 1980 result

NDL: Number of deviations where 2004 result lies below 1980 result

NDD1: Number of deviations which differ by one result grid rounding increment

NDG1: Number of deviations which differ by more than one result grid rounding increment

MAXD: Maximum deviation found

TLCB: Temperature value closest to base at which maximum deviation occurs

DTLCB: Density value for closest temperature value where maximum deviation occurs

Calculated % ratios:

P : % value of differences: $(NDF / NSC) * 100$

PG: % value of deviations - 2004 value above 1980 value: $(NDG / NDF) * 100$

PL: % value of deviations - 2004 value below 1980 value: $(NDL / NDF) * 100$

P1: % value of deviations - deviation one result grid increment: $(NDD1 / NSC) * 100$

PX: % value of deviations - deviation above one result grid increment: $(NDG1 / NSC) * 100$

Results ASTM D1250-80 standard rounding
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 14.507.626 | 9.182.819 | 3.793.338 | 5.389.481 | 4.646.056 | 4.536.763 | 0,00007 | -30,05 | 807,2 |
| 2 | 12.332.026 | 7.224.670 | 2.860.553 | 4.364.117 | 4.210.849 | 3.013.821 | 0,00006 | 1,05 | 816,2 |
| 3 | 2.465.725 | 999.643 | 281.626 | 718.017 | 592.424 | 407.219 | 0,00005 | 19,90 | 1.143,5 |
| 4 | 2.175.600 | 1.958.149 | 932.785 | 1.025.364 | 435.207 | 1.522.942 | 0,00007 | -30,05 | 807,2 |
| 5 | 435 | 391.675 | 186.595 | 205.08 | 87.327 | 304.348 | 0,00006 | -25,30 | 809,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 63,3% | 41,3% | 58,7% | 32,0% | 31,3% | 2004 R./2004 Inc. |
| 2 | 58,6% | 39,6% | 60,4% | 34,1% | 24,4% | 1980 R./2004 Inc. |
| 3 | 40,5% | 28,2% | 71,8% | 24,0% | 16,5% | 1980 R./1980 Inc. |
| 4 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 47,6% | 52,4% | 20,1% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 5.076.400 | 4.569.602 | 2.231.352 | 2.338.250 | 1.015.165 | 3.554.437 | 0,00007 | -30,05 | 807,2 |
| 2 | 2.900.800 | 2.611.453 | 1.298.567 | 1.312.886 | 579.958 | 2.031.495 | 0,00006 | 1,05 | 816,2 |
| 3 | 580 | 522.149 | 259.592 | 262.557 | 116.038 | 406.111 | 0,00005 | 19,90 | 1.143,5 |
| 4 | 2.175.600 | 1.958.149 | 932.785 | 1.025.364 | 435.207 | 1.522.942 | 0,00007 | -30,05 | 807,2 |
| 5 | 435 | 391.675 | 186.595 | 205.08 | 87.327 | 304.348 | 0,00006 | -25,30 | 809,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 48,8% | 51,2% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 47,6% | 52,4% | 20,1% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|---------|---------|--------|--------|
| 1 | 9.431.226 | 4.613.217 | 1.561.986 | 3.051.231 | 3.630.891 | 982.326 | 0,00004 | 129,60 | 800,8 |
| 2 | 9.431.226 | 4.613.217 | 1.561.986 | 3.051.231 | 3.630.891 | 982.326 | 0,00004 | 129,60 | 800,8 |
| 3 | 1.885.725 | 477.494 | 22.034 | 455.46 | 476.386 | 1.108 | 0,00002 | 124,45 | 1133,5 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 48,9% | 33,9% | 66,1% | 38,5% | 10,4% | 2004 R./2004 Inc. |
| 2 | 48,9% | 33,9% | 66,1% | 38,5% | 10,4% | 1980 R./2004 Inc. |
| 3 | 25,3% | 4,6% | 95,4% | 25,3% | 0,1% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|---------|---------|---------|---------|------|--------|--------|-------|
| 1 | 14.507.626 | 566.875 | 158.826 | 408.049 | 566.875 | 0 | 0,0001 | 19,80 | 838,8 |
| 2 | 12.332.026 | 458.827 | 127.986 | 330.841 | 458.827 | 0 | 0,0001 | 19,80 | 838,8 |
| 3 | 2.465.725 | 18.068 | 1.086 | 16.982 | 18.068 | 0 | 0,0001 | 19,55 | 809,0 |
| 4 | 2.175.600 | 108.048 | 30.84 | 77.208 | 108.048 | 0 | 0,0001 | -20,05 | 798,6 |
| 5 | 435 | 10.837 | 776 | 10.061 | 10.837 | 0 | 0,0001 | -20,05 | 809,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,9% | 28,0% | 72,0% | 3,9% | 0,0% | 2004 R./2004 Inc. |
| 2 | 3,7% | 27,9% | 72,1% | 3,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,7% | 6,0% | 94,0% | 0,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 5,0% | 28,5% | 71,5% | 5,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,5% | 7,2% | 92,8% | 2,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|--------|---------|---------|------|--------|--------|-------|
| 1 | 5.076.400 | 158.522 | 52.261 | 106.261 | 158.522 | 0 | 0,0001 | 19,80 | 838,8 |
| 2 | 2.900.800 | 50.474 | 21.421 | 29.053 | 50.474 | 0 | 0,0001 | 19,80 | 838,8 |
| 3 | 580 | 3.696 | 1.086 | 2.61 | 3.696 | 0 | 0,0001 | 19,55 | 809,0 |
| 4 | 2.175.600 | 108.048 | 30.84 | 77.208 | 108.048 | 0 | 0,0001 | -20,05 | 798,6 |
| 5 | 435 | 10.837 | 776 | 10.061 | 10.837 | 0 | 0,0001 | -20,05 | 809,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 3,1% | 33,0% | 67,0% | 3,1% | 0,0% | 2004 R./2004 Inc. |
| 2 | 1,7% | 42,4% | 57,6% | 1,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,6% | 29,4% | 70,6% | 0,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 5,0% | 28,5% | 71,5% | 5,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,5% | 7,2% | 92,8% | 2,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|---------|---------|---------|------|--------|-------|--------|
| 1 | 9.431.226 | 408.353 | 106.565 | 301.788 | 408.353 | 0 | 0,0001 | 41,70 | 804,7 |
| 2 | 9.431.226 | 408.353 | 106.565 | 301.788 | 408.353 | 0 | 0,0001 | 41,70 | 804,7 |
| 3 | 1.885.725 | 14.372 | 0 | 14.372 | 14.372 | 0 | 0,0001 | 74,55 | 1139,5 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|--------|------|------|-----------------------|
| 1 | 4,3% | 26,1% | 73,9% | 4,3% | 0,0% | 2004 R./2004 Inc. |
| 2 | 4,3% | 26,1% | 73,9% | 4,3% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,8% | 0,0% | 100,0% | 0,8% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

Results ASTM D1250-80 with "German rounding" (Input data)
VCF - 5 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|------------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 14.507.626 | 6.920.128 | 2.347.369 | 4.572.759 | 3.360.021 | 3.560.107 | 0,00006 | -22,15 | 804,1 |
| 2 | 12.332.026 | 4.961.979 | 1.416.068 | 3.545.911 | 2.924.814 | 2.037.165 | 0,00005 | 19,90 | 1.143,4 |
| 3 | 12.332.026 | 4.961.979 | 1.416.068 | 3.545.911 | 2.924.814 | 2.037.165 | 0,00005 | 19,90 | 1.143,4 |
| 4 | 2.175.600 | 1.958.149 | 931.301 | 1.026.848 | 435.207 | 1.522.942 | 0,00006 | -22,15 | 804,1 |
| 5 | 2.175.600 | 1.958.149 | 931.301 | 1.026.848 | 435.207 | 1.522.942 | 0,00006 | -22,15 | 804,1 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 47,7% | 33,9% | 66,1% | 23,2% | 24,5% | 2004 R./2004 Inc. |
| 2 | 40,2% | 28,5% | 71,5% | 23,7% | 16,5% | 1980 R./2004 Inc. |
| 3 | 40,2% | 28,5% | 71,5% | 23,7% | 16,5% | 1980 R./1980 Inc. |
| 4 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|-----------|-----------|-----------|-----------|---------|--------|---------|
| 1 | 5.076.400 | 4.569.602 | 2.229.555 | 2.340.047 | 1.015.165 | 3.554.437 | 0,00006 | -22,15 | 804,1 |
| 2 | 2.900.800 | 2.611.453 | 1.298.254 | 1.313.199 | 579.958 | 2.031.495 | 0,00005 | 19,90 | 1.143,4 |
| 3 | 2.900.800 | 2.611.453 | 1.298.254 | 1.313.199 | 579.958 | 2.031.495 | 0,00005 | 19,90 | 1.143,4 |
| 4 | 2.175.600 | 1.958.149 | 931.301 | 1.026.848 | 435.207 | 1.522.942 | 0,00006 | -22,15 | 804,1 |
| 5 | 2.175.600 | 1.958.149 | 931.301 | 1.026.848 | 435.207 | 1.522.942 | 0,00006 | -22,15 | 804,1 |

| C | P | PG | PL | P1 | PX | |
|---|-------|-------|-------|-------|-------|-----------------------|
| 1 | 90,0% | 48,8% | 51,2% | 20,0% | 70,0% | 2004 R./2004 Inc. |
| 2 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 1980 R./2004 Inc. |
| 3 | 90,0% | 49,7% | 50,3% | 20,0% | 70,0% | 1980 R./1980 Inc. |
| 4 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext. R/2004 Inc. |
| 5 | 90,0% | 47,6% | 52,4% | 20,0% | 70,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|-----------|---------|-----------|-----------|------|---------|--------|--------|
| 1 | 9.431.226 | 2.350.526 | 117.814 | 2.232.712 | 2.344.856 | 5.67 | 0,00002 | 124,45 | 1133,5 |
| 2 | 9.431.226 | 2.350.526 | 117.814 | 2.232.712 | 2.344.856 | 5.67 | 0,00002 | 124,45 | 1133,5 |
| 3 | 9.431.226 | 2.350.526 | 117.814 | 2.232.712 | 2.344.856 | 5.67 | 0,00002 | 124,45 | 1133,5 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,00000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|-------|------|-------|-------|------|-----------------------|
| 1 | 24,9% | 5,0% | 95,0% | 24,9% | 0,1% | 2004 R./2004 Inc. |
| 2 | 24,9% | 5,0% | 95,0% | 24,9% | 0,1% | 1980 R./2004 Inc. |
| 3 | 24,9% | 5,0% | 95,0% | 24,9% | 0,1% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

VCF - 4 decimals

All temperature values

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|---------|-------|---------|---------|------|--------|--------|-------|
| 1 | 14.507.62 | 143.377 | 9.003 | 134.374 | 143.377 | 0 | 0,0001 | 19,65 | 880,8 |
| 2 | 12.332.02 | 88.203 | 5.342 | 82.861 | 88.203 | 0 | 0,0001 | 19,65 | 880,8 |
| 3 | 12.332.02 | 88.203 | 5.342 | 82.861 | 88.203 | 0 | 0,0001 | 19,65 | 880,8 |
| 4 | 2.175.600 | 55.174 | 3.661 | 51.513 | 55.174 | 0 | 0,0001 | -20,05 | 798,6 |
| 5 | 2.175.600 | 55.174 | 3.661 | 51.513 | 55.174 | 0 | 0,0001 | -20,05 | 798,6 |

| C | P | PG | PL | P1 | PX | |
|---|------|------|-------|------|------|-----------------------|
| 1 | 1,0% | 6,3% | 93,7% | 1,0% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,7% | 6,1% | 93,9% | 0,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,7% | 6,1% | 93,9% | 0,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 2,5% | 6,6% | 93,4% | 2,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,5% | 6,6% | 93,4% | 2,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values below base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|-------|--------|--------|------|--------|--------|-------|
| 1 | 5.076.400 | 73.803 | 9.003 | 64.8 | 73.803 | 0 | 0,0001 | 19,65 | 880,8 |
| 2 | 2.900.800 | 18.629 | 5.342 | 13.287 | 18.629 | 0 | 0,0001 | 19,65 | 880,8 |
| 3 | 2.900.800 | 18.629 | 5.342 | 13.287 | 18.629 | 0 | 0,0001 | 19,65 | 880,8 |
| 4 | 2.175.600 | 55.174 | 3.661 | 51.513 | 55.174 | 0 | 0,0001 | -20,05 | 798,6 |
| 5 | 2.175.600 | 55.174 | 3.661 | 51.513 | 55.174 | 0 | 0,0001 | -20,05 | 798,6 |

| C | P | PG | PL | P1 | PX | |
|---|------|-------|-------|------|------|-----------------------|
| 1 | 1,5% | 12,2% | 87,8% | 1,5% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,6% | 28,7% | 71,3% | 0,6% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,6% | 28,7% | 71,3% | 0,6% | 0,0% | 1980 R./1980 Inc. |
| 4 | 2,5% | 6,6% | 93,4% | 2,5% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 2,5% | 6,6% | 93,4% | 2,5% | 0,0% | 1980 Ext./1980 Inc. |

Temperature values equal to or above base

| C | NSC | NDF | NDG | NDL | NDD1 | NDG1 | MAXD | TLCB | DTLCB |
|---|-----------|--------|-----|--------|--------|------|--------|-------|--------|
| 1 | 9.431.226 | 69.574 | 0 | 69.574 | 69.574 | 0 | 0,0001 | 74,55 | 1139,5 |
| 2 | 9.431.226 | 69.574 | 0 | 69.574 | 69.574 | 0 | 0,0001 | 74,55 | 1139,5 |
| 3 | 9.431.226 | 69.574 | 0 | 69.574 | 69.574 | 0 | 0,0001 | 74,55 | 1139,5 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0,0000 | 0,00 | 0,0 |

| C | P | PG | PL | P1 | PX | |
|---|------|------|--------|------|------|-----------------------|
| 1 | 0,7% | 0,0% | 100,0% | 0,7% | 0,0% | 2004 R./2004 Inc. |
| 2 | 0,7% | 0,0% | 100,0% | 0,7% | 0,0% | 1980 R./2004 Inc. |
| 3 | 0,7% | 0,0% | 100,0% | 0,7% | 0,0% | 1980 R./1980 Inc. |
| 4 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext. R/2004 Inc. |
| 5 | 0,0% | 0,0% | 0,0% | 0,0% | 0,0% | 1980 Ext./1980 Inc. |

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