# QUALITY ASSURANCE AUDIT REPORT

## North Texas Commission
## Ambient Air and Meteorological Monitoring

**Prepared for:**

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**Conducted:**

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# EXECUTIVE SUMMARY

On May 23rd through May 24th, and June 11th through June 14th, 2018, an audit team from the AECOM ambient air group in Austin, Texas conducted performance and technical system audits of the North Texas Commission (NTC) ambient air monitoring network. The audits provide an independent assessment of the monitoring program.

The monitoring program at NTC consists of continuous gas chromatographs (GC), volatile organic compound (VOC) canister collection systems, and meteorological sensors including wind speed, wind direction, and temperature.

The performance audit results indicate acceptable responses for measurement systems with the exceptions summarized below.

The wind direction sensors were found to be outside the total maximum error specification of ± 5˚ at three sites: Bowie, Weatherford, and Wichita Falls. The wind direction sensor at Bowie was replaced after the audit. The wind direction sensors at Weatherford and Wichita Falls were realigned and found to be within the audit objective. Following realignment, there is no further field action required.

The wind speed sensor bearings were outside of the audit guidance of 0.3 g-cm for the torque test at Benbrook. New bearings were installed at the site that proceeded to pass the re-audit with a torque test result of 0.1 g-cm.

Out of the 48 compounds being analyzed, six compounds (ethylene, propylene, acetylene, styrene, 1,2,3-trimethylbenzene, and n-undecane) were found to be outside of the audit objective of 70% - 130% recovery at several sites. In addition, Benbrook site had the following GC compound recoveries outside of the audit specification:

| Locations | Compounds |
|---|---|
| Benbrook | M&P-xylene, isopropylbenzene, n-propylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, n-decane |

These network GC audit results are comparable historically to other AECOM auto-GC audits. No problems were identified in the quality control procedures at any of these sites that would indicate a persistent measurement error.

Technical systems audit results demonstrate satisfactory operational procedures for collecting valid data.

A performance evaluation (PE) sample is prepared by the AECOM QA group on a quarterly basis and submitted to the VOC laboratory for analysis. This performance evaluation sample contained known (spiked) concentrations of the target VOCs. A review of the sample recoveries for the spiked target VOCs shows that ten of the compounds were not within the range of expected values (70-130%). All ten compounds were below the acceptable sample recovery, with the exception of ethane:

- 1,2,4-trimethylbenzene (46.1%),
- 1,3,5-trimethylbenzene (55.1%),
- 1-hexene (62.0%),
- 4-ethyltoluene (49.5%),
- ethane (154.6%),
- ethylbenzene (62.4%),
- M&P-xylene (66.7%),
- o-xylene (64.0%),
- styrene (61.9%), and
- toluene (67.2%)

Over the past year, the PE sample recoveries have been lower than expected for heavier, non-halogenated VOCs. 1-hexene has also historically been a problematic compound for VOC work and typically has lower recoveries. AECOM QA staff and the sampling lab have been working together to investigate the low recoveries of these compounds. The percent recovery for ethene and other C2 compounds can be challenging for lower concentrations due to the lab's level of quantification limit being higher than the theoretical input. AECOM QA staff shared the performance evaluation results with the VOC laboratory, and no other corrective action was taken. We will continue to evaluate these compounds in our PE samples and work with the lab to resolve these discrepancies. Below are GD Air's most recent performance evaluation canister results during the second quarter of 2018.

## Table ES-1. Results of Performance Standard for Off-Site Analytical Lab

| Compound Name | CAS Number | Concentration (ppb-v) | Lab Results (ppb-v) | Percent Recovery |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | 71-55-6 | 2.9 | 2.7 | 93.7% |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 2.9 | 2.1 | 73.0% |
| 1,1,2-Trichloroethane | 79-00-5 | 2.9 | 2.4 | 81.3% |
| 1,1-Dichloroethane | 75-34-3 | 2.8 | 2.6 | 92.1% |
| 1,1-Dichloroethene | 75-35-4 | 2.9 | 2.7 | 94.5% |
| 1,2,4-Trimethylbenzene | 95-63-6 | 2.8 | 1.3 | **46.1%** |
| 1,2-Dibromoethane | 106-93-4 | 2.9 | 2.2 | 75.8% |
| 1,2-Dichlorobenzene (o-Dichlorobenzene) | 95-50-1 | 2.7 | 2.6 | 94.4% |
| 1,2-Dichloroethane | 107-06-2 | 2.9 | 2.6 | 89.8% |
| 1,2-Dichloropropane | 78-87-5 | 2.9 | 2.4 | 84.5% |
| 1,3,5-Trimethylbenzene | 108-67-8 | 2.8 | 1.5 | **55.1%** |
| 1,3-Butadiene | 106-99-0 | 5.7 | 5.4 | 95.5% |
| 1-Butene | 106-98-9 | 2.9 | 2.9 | 101.1% |
| 1-Hexene | 592-41-6 | 2.7 | 1.7 | **62.0%** |
| 1-Pentene | 109-67-1 | 2.9 | 2.4 | 83.4% |
| 2,2,4-Trimethylpentane | 540-84-1 | 2.9 | 2.5 | 88.4% |
| 4-Ethyltoluene (p-Ethyltoluene) | 622-96-8 | 2.8 | 1.4 | **49.5%** |
| Benzene | 71-43-2 | 2.9 | 2.3 | 77.8% |
| Bromomethane | 74-83-9 | 2.8 | 2.8 | 100.7% |
| c-1,3-Dichloropropene | 10061-01-5 | 2.9 | 2.4 | 83.2% |
| Carbon tetrachloride | 56-23-5 | 2.9 | 2.7 | 94.7% |
| Chlorobenzene | 108-90-7 | 2.9 | 2.1 | 70.6% |
| Chloroform | 67-66-3 | 2.8 | 2.6 | 93.2% |
| Chloromethane (Methyl Chloride) | 74-87-3 | 2.9 | 3.1 | 108.7% |
| Cyclohexane | 110-82-7 | 2.9 | 2.3 | 77.5% |
| Dichlorodifluoromethane (Freon-12) | 75-71-8 | 2.8 | 2.9 | 105.8% |
| Ethane | 74-84-0 | 3.0 | 4.7 | **154.6%** |
| Ethene | 74-85-1 | 3.0 | 3.6 | 119.9% |
| Ethylbenzene | 100-41-4 | 2.9 | 1.8 | **62.4%** |
| Methylene Chloride (Dichloromethane) | 75-09-2 | 2.8 | 2.8 | 100.4% |
| m-Xylene & p-Xylene | 108-38-3 | 5.6 | 3.7 | **66.7%** |
| n-Butane | 106-97-8 | 2.9 | 3.2 | 108.7% |
| n-Heptane | 142-82-5 | 2.9 | 2.3 | 81.4% |
| n-Hexane | 110-54-3 | 8.6 | 8.3 | 97.1% |
| n-Pentane | 109-66-0 | 2.9 | 2.9 | 102.8% |
| o-Xylene | 95-47-6 | 2.9 | 1.9 | **64.0%** |
| Propane | 74-98-6 | 2.9 | 3.3 | 116.4% |
| Propylene | 115-07-1 | 5.9 | 5.1 | 86.8% |
| Styrene | 100-42-5 | 2.9 | 1.8 | **61.9%** |
| t-1,3-Dichloropropene | 10061-02-6 | 2.9 | 2.5 | 87.7% |
| Tetrachloroethene | 127-18-4 | 2.9 | 2.0 | 70.6% |
| Toluene | 108-88-3 | 2.9 | 2.0 | **67.2%** |
| Trichloroethene | 79-01-6 | 2.9 | 2.3 | 78.5% |
| Trichlorofluoromethane (Freon-11) | 75-69-4 | 2.9 | 2.8 | 96.5% |
| Vinyl Chloride | 75-01-4 | 2.9 | 2.9 | 100.7% |

## Table ES-2. Audit Standard Results for all Network GCs

| | | | Benbrook | Decatur | Dish | Eagle Mountain |
|---|---|---|---|---|---|---|
| Compound Name[a] | CAS Number | Audit Conc (ppbc) | % Recovery | % Recovery | % Recovery | % Recovery |
| Ethane | 74-84-0 | 7.8 | 85.7% | 103.1% | 96.5% | 96.8% |
| Ethylene | 74-85-1 | 7.8 | **56.9%** | 75.5% | **62.6%** | 76.6% |
| Propane | 74-98-6 | 12.0 | 90.2% | 96.3% | 101.4% | 97.0% |
| Propylene | 115-07-1 | 12.0 | **60.4%** | 72.0% | **69.3%** | **69.3%** |
| Iso-Butane | 75-28-5 | 15.7 | 103.4% | 108.6% | 103.4% | 108.5% |
| N-Butane | 106-97-8 | 15.7 | 105.5% | 111.1% | 105.3% | 110.4% |
| Acetylene | 74-86-2 | 7.8 | 74.4% | **68.7%** | **59.7%** | **65.5%** |
| Trans-2-Butene | 624-64-6 | 15.5 | 104.2% | 113.0% | 106.9% | 109.7% |
| 1-Butene | 106-98-9 | 15.7 | 104.8% | 110.7% | 104.4% | 109.4% |
| Cis-2-Butene | 590-18-1 | 16.8 | 103.0% | 109.4% | 103.9% | 108.7% |
| Cyclopentane | 287-92-3 | 19.8 | 103.2% | 112.1% | 104.9% | 111.8% |
| Iso-Pentane | 78-78-4 | 20.6 | 107.1% | 110.4% | 106.2% | 114.0% |
| N-Pentane | 109-66-0 | 19.8 | 106.2% | 113.4% | 106.7% | 113.9% |
| 1,3-Butadiene | 106-99-0 | 17.4 | 97.1% | 91.8% | 97.1% | 99.7% |
| Trans-2-Pentene | 646-04-8 | 20.4 | 99.8% | 100.8% | 100.4% | 101.2% |
| 1-Pentene | 109-67-1 | 19.8 | 98.7% | 83.7% | 101.0% | 93.6% |
| Cis-2-Pentene | 627-20-3 | 21.2 | 98.2% | 85.6% | 98.5% | 91.5% |
| 2,2-Dimethylbutane | 75-83-2 | 24.2 | 108.2% | 102.5% | 99.3% | 100.5% |
| 2-Methylpentane | 107-83-5 | 23.5 | 104.2% | 105.9% | 104.0% | 99.9% |
| Isoprene | 78-79-5 | 20.2 | 75.6% | 74.5% | 84.5% | 80.6% |
| n-Hexane | 110-54-3 | 24.5 | 85.2% | 83.3% | 91.4% | 81.7% |
| Methylcyclopentane | 108-87-2 | 24.7 | 79.6% | 83.3% | 89.0% | 85.4% |
| 2,4-Dimethylpentane | 108-08-7 | 28.6 | 93.4% | 111.5% | 102.4% | 113.0% |
| Benzene | 71-43-2 | 24.5 | 84.1% | 97.7% | 90.0% | 87.4% |
| Cyclohexane | 110-82-7 | 24.2 | 88.9% | 102.0% | 94.7% | 96.6% |
| 2-Methylhexane | 591-76-4 | 28.8 | 72.4% | 81.0% | 84.8% | 75.7% |
| 2,3-Dimethylpentane | 565-59-3 | 29.1 | 95.5% | 117.0% | 103.6% | 113.7% |
| 3-Methylhexane | 589-34-4 | 28.3 | 82.1% | 103.2% | 95.3% | 99.4% |
| 2,2,4-Trimethylpentane | 540-84-1 | 32.3 | 84.0% | 96.0% | 94.4% | 95.5% |
| n-Heptane | 142-82-5 | 28.6 | 83.5% | 92.4% | 95.5% | 91.1% |
| Methylcyclohexane | 108-87-2 | 28.6 | 80.3% | 95.5% | 95.1% | 96.4% |
| 2,3,4-Trimethylpentane | 565-75-3 | 32.0 | 80.7% | 94.0% | 93.0% | 92.7% |
| Toluene | 108-88-3 | 29.1 | 71.0% | 87.7% | 89.2% | 89.3% |
| 2-Methylheptane | 592-27-8 | 32.3 | 79.9% | 93.8% | 93.1% | 91.6% |
| 3-Methylheptane | 589-81-1 | 32.0 | 83.6% | 94.6% | 94.6% | 95.3% |
| n-Octane | 111-65-9 | 32.3 | 79.4% | 93.6% | 93.6% | 93.0% |
| Ethylbenzene | 100-41-4 | 32.3 | 70.6% | 90.2% | 86.6% | 85.5% |
| M&P-Xylene | 108-38-3 | 64.6 | **67.3%** | 87.4% | 84.7% | 85.1% |
| Styrene | 100-42-5 | 32.0 | **61.4%** | 78.7% | 75.8% | 76.8% |
| O-Xylene | 95-47-6 | 32.0 | 74.3% | 93.1% | 84.7% | 92.2% |
| N-Nonane | 111-84-2 | 35.3 | 76.9% | 92.5% | 90.2% | 94.1% |
| Isopropylbenzene | 98-82-8 | 34.9 | **69.6%** | 90.1% | 85.7% | 86.5% |
| n-Propylbenzene | 103-65-1 | 34.6 | **68.4%** | 87.5% | 86.0% | 83.9% |
| 1,3,5-Trimethylbenzene | 108-67-8 | 35.6 | **63.4%** | 87.5% | 76.2% | 76.8% |
| 1,2,4-Trimethylbenzene | 95-63-6 | 34.9 | **68.1%** | 86.8% | 83.5% | 81.2% |
| n-Decane | 124-18-5 | 39.2 | **68.0%** | 85.1% | 84.6% | 80.8% |
| 1,2,3-Trimethylbenzene | 526-73-8 | 33.8 | **55.1%** | 72.1% | 72.3% | **69.3%** |
| n-Undecane | 1120-21-4 | 41.8 | **64.2%** | 70.0% | **63.1%** | **61.6%** |

[a] Compound order based on elution time.

## Table ES-2. (continued) Audit Standard Results for all Network GCs

| | | | Elm Fork | Everman | Flower Mound | Godley |
|---|---|---|---|---|---|---|
| Compound Name[a] | CAS Number | Audit Conc (ppbc) | % Recovery | % Recovery | % Recovery | % Recovery |
| Ethane | 74-84-0 | 7.8 | 96.7% | 101.5% | 99.2% | 99.5% |
| Ethylene | 74-85-1 | 7.8 | **58.3%** | **69.3%** | 72.5% | **69.2%** |
| Propane | 74-98-6 | 12.0 | 112.2% | 101.9% | 95.7% | 99.9% |
| Propylene | 115-07-1 | 12.0 | 84.6% | 76.6% | 70.6% | **67.7%** |
| Iso-Butane | 75-28-5 | 15.7 | 120.6% | 122.3% | 106.0% | 112.7% |
| N-Butane | 106-97-8 | 15.7 | 123.6% | 122.7% | 105.2% | 114.4% |
| Acetylene | 74-86-2 | 7.8 | 99.1% | **57.7%** | 88.3% | 75.0% |
| Trans-2-Butene | 624-64-6 | 15.5 | 120.9% | 120.6% | 106.8% | 113.2% |
| 1-Butene | 106-98-9 | 15.7 | 121.6% | 121.1% | 107.2% | 110.6% |
| Cis-2-Butene | 590-18-1 | 16.8 | 118.2% | 118.8% | 104.3% | 108.7% |
| Cyclopentane | 287-92-3 | 19.8 | 121.5% | 121.4% | 106.1% | 113.3% |
| Iso-Pentane | 78-78-4 | 20.6 | 121.4% | 123.5% | 108.0% | 113.9% |
| N-Pentane | 109-66-0 | 19.8 | 122.5% | 123.8% | 107.9% | 115.7% |
| 1,3-Butadiene | 106-99-0 | 17.4 | 105.8% | 113.5% | 92.1% | 93.9% |
| Trans-2-Pentene | 646-04-8 | 20.4 | 114.2% | 117.0% | 96.8% | 103.1% |
| 1-Pentene | 109-67-1 | 19.8 | 109.3% | 115.7% | 92.9% | 90.8% |
| Cis-2-Pentene | 627-20-3 | 21.2 | 113.2% | 117.1% | 93.1% | 99.7% |
| 2,2-Dimethylbutane | 75-83-2 | 24.2 | 120.6% | 120.9% | 94.7% | 112.3% |
| 2-Methylpentane | 107-83-5 | 23.5 | 121.7% | 120.0% | 101.1% | 112.9% |
| Isoprene | 78-79-5 | 20.2 | 96.2% | 104.5% | 82.4% | 85.1% |
| n-Hexane | 110-54-3 | 24.5 | 99.1% | 107.4% | 98.3% | 101.2% |
| Methylcyclopentane | 108-87-2 | 24.7 | 92.6% | 88.7% | 85.6% | 99.4% |
| 2,4-Dimethylpentane | 108-08-7 | 28.6 | 108.7% | 112.5% | 102.8% | 104.7% |
| Benzene | 71-43-2 | 24.5 | 100.3% | 89.3% | 82.9% | 94.5% |
| Cyclohexane | 110-82-7 | 24.2 | 102.5% | 106.7% | 92.5% | 104.6% |
| 2-Methylhexane | 591-76-4 | 28.8 | 89.9% | 73.0% | 79.9% | 90.3% |
| 2,3-Dimethylpentane | 565-59-3 | 29.1 | 109.8% | 125.4% | 103.8% | 109.5% |
| 3-Methylhexane | 589-34-4 | 28.3 | 104.5% | 99.7% | 94.2% | 104.0% |
| 2,2,4-Trimethylpentane | 540-84-1 | 32.3 | 100.1% | 97.3% | 93.5% | 97.8% |
| n-Heptane | 142-82-5 | 28.6 | 103.0% | 92.4% | 93.4% | 98.7% |
| Methylcyclohexane | 108-87-2 | 28.6 | 99.6% | 100.4% | 94.1% | 98.7% |
| 2,3,4-Trimethylpentane | 565-75-3 | 32.0 | 98.1% | 98.0% | 92.6% | 97.0% |
| Toluene | 108-88-3 | 29.1 | 91.3% | 90.5% | 91.1% | 85.9% |
| 2-Methylheptane | 592-27-8 | 32.3 | 97.0% | 96.0% | 92.2% | 94.9% |
| 3-Methylheptane | 589-81-1 | 32.0 | 98.3% | 93.9% | 93.8% | 100.0% |
| n-Octane | 111-65-9 | 32.3 | 96.1% | 97.2% | 91.5% | 94.8% |
| Ethylbenzene | 100-41-4 | 32.3 | 88.1% | 88.2% | 85.0% | 85.5% |
| M&P-Xylene | 108-38-3 | 64.6 | 84.9% | 86.3% | 82.4% | 82.4% |
| Styrene | 100-42-5 | 32.0 | 81.4% | **68.6%** | 73.5% | 74.5% |
| O-Xylene | 95-47-6 | 32.0 | 90.1% | 98.3% | 87.1% | 87.6% |
| N-Nonane | 111-84-2 | 35.3 | 92.3% | 98.4% | 86.6% | 90.0% |
| Isopropylbenzene | 98-82-8 | 34.9 | 85.9% | 90.1% | 85.3% | 86.5% |
| n-Propylbenzene | 103-65-1 | 34.6 | 83.3% | 85.6% | 83.1% | 87.4% |
| 1,3,5-Trimethylbenzene | 108-67-8 | 35.6 | 74.4% | 84.9% | 78.4% | 79.1% |
| 1,2,4-Trimethylbenzene | 95-63-6 | 34.9 | 79.6% | 82.6% | 80.0% | 79.1% |
| n-Decane | 124-18-5 | 39.2 | 76.6% | 83.1% | 79.8% | 80.1% |
| 1,2,3-Trimethylbenzene | 526-73-8 | 33.8 | **67.1%** | 72.1% | 70.6% | **69.4%** |
| n-Undecane | 1120-21-4 | 41.8 | **64.2%** | **66.2%** | **67.8%** | **60.5%** |

[a] Compound order based on elution time.

## Table ES-2. (continued) Audit Standard Results for all Network GCs

| | | | Kennedale | Mansfield | Rhome | Rushing | UTA Campus |
|---|---|---|---|---|---|---|---|
| Compound Name[a] | CAS Number | Audit Conc (ppbc) | % Recovery | % Recovery | % Recovery | % Recovery | % Recovery |
| Ethane | 74-84-0 | 7.8 | 95.8% | 98.8% | 99.3% | 98.0% | 98.0% |
| Ethylene | 74-85-1 | 7.8 | **66.4%** | 71.1% | 71.0% | **69.0%** | **69.6%** |
| Propane | 74-98-6 | 12.0 | 102.6% | 100.4% | 95.5% | 99.3% | 95.3% |
| Propylene | 115-07-1 | 12.0 | **65.3%** | 77.6% | **64.1%** | 70.3% | 70.0% |
| Iso-Butane | 75-28-5 | 15.7 | 113.4% | 121.2% | 99.6% | 114.6% | 116.3% |
| N-Butane | 106-97-8 | 15.7 | 116.9% | 123.7% | 101.1% | 117.9% | 117.9% |
| Acetylene | 74-86-2 | 7.8 | **69.6%** | **49.0%** | 74.6% | **53.9%** | **50.0%** |
| Trans-2-Butene | 624-64-6 | 15.5 | 116.6% | 122.5% | 99.5% | 115.7% | 115.0% |
| 1-Butene | 106-98-9 | 15.7 | 115.3% | 121.2% | 97.9% | 113.0% | 113.5% |
| Cis-2-Butene | 590-18-1 | 16.8 | 114.3% | 119.5% | 96.0% | 112.2% | 112.5% |
| Cyclopentane | 287-92-3 | 19.8 | 117.5% | 122.9% | 99.7% | 115.8% | 116.1% |
| Iso-Pentane | 78-78-4 | 20.6 | 119.8% | 124.6% | 101.3% | 115.4% | 117.5% |
| N-Pentane | 109-66-0 | 19.8 | 119.9% | 125.2% | 103.6% | 117.4% | 117.3% |
| 1,3-Butadiene | 106-99-0 | 17.4 | 104.7% | 113.1% | 89.8% | 101.6% | 101.1% |
| Trans-2-Pentene | 646-04-8 | 20.4 | 110.3% | 117.1% | 94.7% | 106.4% | 105.6% |
| 1-Pentene | 109-67-1 | 19.8 | 110.2% | 118.6% | 93.2% | 103.6% | 106.6% |
| Cis-2-Pentene | 627-20-3 | 21.2 | 110.4% | 118.9% | 94.4% | 106.4% | 98.8% |
| 2,2-Dimethylbutane | 75-83-2 | 24.2 | 115.7% | 122.7% | 99.6% | 114.1% | 113.7% |
| 2-Methylpentane | 107-83-5 | 23.5 | 117.3% | 122.5% | 101.2% | 115.8% | 115.6% |
| Isoprene | 78-79-5 | 20.2 | 94.9% | 106.9% | 80.8% | 90.0% | 86.5% |
| n-Hexane | 110-54-3 | 24.5 | 95.5% | 96.6% | 95.0% | 94.8% | 98.7% |
| Methylcyclopentane | 108-87-2 | 24.7 | 87.2% | 94.6% | 91.2% | 90.0% | 96.5% |
| 2,4-Dimethylpentane | 108-08-7 | 28.6 | 108.6% | 97.8% | 100.3% | 102.3% | 97.9% |
| Benzene | 71-43-2 | 24.5 | 93.7% | 88.9% | 91.3% | 87.2% | 98.0% |
| Cyclohexane | 110-82-7 | 24.2 | 102.9% | 97.5% | 99.9% | 102.2% | 102.1% |
| 2-Methylhexane | 591-76-4 | 28.8 | 78.2% | 89.2% | 87.5% | 79.3% | 89.5% |
| 2,3-Dimethylpentane | 565-59-3 | 29.1 | 112.1% | 98.2% | 105.4% | 109.7% | 100.8% |
| 3-Methylhexane | 589-34-4 | 28.3 | 100.2% | 95.5% | 102.3% | 95.6% | 96.2% |
| 2,2,4-Trimethylpentane | 540-84-1 | 32.3 | 91.6% | 92.7% | 94.8% | 93.8% | 92.1% |
| n-Heptane | 142-82-5 | 28.6 | 91.1% | 93.2% | 92.8% | 90.3% | 94.1% |
| Methylcyclohexane | 108-87-2 | 28.6 | 95.7% | 94.3% | 97.7% | 94.2% | 93.0% |
| 2,3,4-Trimethylpentane | 565-75-3 | 32.0 | 88.0% | 89.5% | 95.7% | 92.2% | 91.3% |
| Toluene | 108-88-3 | 29.1 | 80.3% | 84.3% | 84.2% | 87.4% | 82.4% |
| 2-Methylheptane | 592-27-8 | 32.3 | 86.7% | 88.6% | 92.1% | 92.9% | 88.7% |
| 3-Methylheptane | 589-81-1 | 32.0 | 89.2% | 90.8% | 97.2% | 93.7% | 90.1% |
| n-Octane | 111-65-9 | 32.3 | 88.2% | 87.2% | 91.0% | 88.9% | 87.4% |
| Ethylbenzene | 100-41-4 | 32.3 | 78.9% | 82.1% | 83.0% | 78.1% | 78.8% |
| M&P-Xylene | 108-38-3 | 64.6 | 77.0% | 79.3% | 84.3% | 78.6% | 76.1% |
| Styrene | 100-42-5 | 32.0 | **63.8%** | 71.1% | **66.9%** | **67.3%** | 72.5% |
| O-Xylene | 95-47-6 | 32.0 | 85.4% | 78.6% | 83.6% | 85.7% | 82.0% |
| N-Nonane | 111-84-2 | 35.3 | 87.5% | 82.6% | 88.9% | 87.4% | 86.0% |
| Isopropylbenzene | 98-82-8 | 34.9 | 78.4% | 81.0% | 82.8% | 79.2% | 77.7% |
| n-Propylbenzene | 103-65-1 | 34.6 | 75.7% | 79.0% | 83.1% | 78.1% | 75.3% |
| 1,3,5-Trimethylbenzene | 108-67-8 | 35.6 | 75.4% | 70.8% | 78.5% | 75.3% | 71.7% |
| 1,2,4-Trimethylbenzene | 95-63-6 | 34.9 | 73.4% | 77.8% | 78.1% | 85.2% | 75.9% |
| n-Decane | 124-18-5 | 39.2 | 72.9% | 74.7% | 82.4% | 81.4% | 73.5% |
| 1,2,3-Trimethylbenzene | 526-73-8 | 33.8 | **65.9%** | **69.0%** | **66.0%** | **65.5%** | **65.2%** |
| n-Undecane | 1120-21-4 | 41.8 | **69.0%** | **64.0%** | **63.0%** | **60.1%** | **61.7%** |

[a] Compound order based on elution time.