Obtaining Pressurized Liquid Hydrocarbons Samples

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FOREWORD

The 2014 revision of GPA 2174 was based on the original standard, first published in 1974 and revised in 1983. It expanded and revised the 1983 revision to include additional natural gas liquid sampling procedures. These changes were primarily the result of a cooperative analytical study directed by a GPA Midstream Association workgroup through Technical Section B (now the Analysis, Test Methods & Product Specifications Committee). Testing was performed on eight potential sampling methods. Ten laboratories and 18 volunteers were eventually involved in gathering 320 samples that covered over 7,000 data points. Criteria for an acceptable sampling method required that it demonstrated minimal variability, was representative of the source, and was user friendly. Details of the project addressed experimental design, sample collection, logic of the evaluation process, and statistical analysis; final conclusions were presented in the Proceedings of GPA Midstream Association's 67th Annual Convention, March 1988, in Dallas, Texas.

Sampling techniques found to be acceptable via chromatographic analysis of the 10 common components of natural gas liquids, which are covered in the workgroup report, are:

1. Floating Piston Cylinder (original GPA 2174 standard)
2. Water Displacement (total H_2O removal - 80% replaced by hydrocarbons; 20% displaced for outage)
3. Water Displacement (partial H_2O removal - 70% replaced by hydrocarbons; 20% displaced for outage; 10% remaining in sample cylinder)
4. Ethylene Glycol Displacement (total glycol removal - 80% replaced by hydrocarbons; 20% displaced for outage)

A proper sample can be obtained when using any of the four techniques listed, provided a strict adherence to detail is maintained. It is recommended that potential users of these techniques study the workgroup report prior to selection of an appropriate sampling technique for each specific situation.

The 2020 revision of GPA 2174 moved the "LIQUID PHASE LABORATORY HANDLING AND PREPARATION" section into an Appendix for future relocation into a stand-alone document. Other revisions include formatting and style changes.

ACRONYMS

DOT – Department of Transportation

ID – identity document

kPa – kilopascal

NGL – natural gas liquid

psi – pound per square inch