Volatile Organic Compound Analysis Results for Samples Collected in Nuiqsut, Alaska

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 4/6/2022

Analysis Conducted by: Atmospheric Analysis & Consulting, Inc.

Analysis Method: EPA Method TO-12/PAMS Protocol by GC/MS/FID

Laboratory Analysis Report

CLIENT : SLR International Corporation
PROJECT NO : 220748
MATRIX : AIR
UNITS : ppb (v/v)

DATE RECEIVED : 04/08/2022
DATE REPORTED : 04/11/2022

HYDROCARBONS (C2-C12) SPECIATED

Client ID	NUI			Sample Reporting Limit (SRL) (MRLxDFs)	NUI DUP			Sample Reporting Limit (SRL) (MRLxDFs)	Method Reporting Limit (MRL)
AAC ID	220748-30001				220748-30002				
Date Sampled	04/06/2022				04/06/2022				
Date Analyzed	04/08/2022				04/08/2022				
Can Dilution Factor	1.69				1.57				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Ethylene	<SRL	U	1	0.84	<SRL	U	1	0.78	0.50
Acetylene	<SRL	U	1	0.84	<SRL	U	1	0.78	0.50
Ethane	3.37		1	0.84	3.37		1	0.78	0.50
Propylene	1.25		1	1.12	1.14		1	1.05	0.67
Propane	3.10		1	0.56	1.58		1	0.52	0.33
Isobutane	<SRL	U	1	0.42	<SRL	U	1	0.39	0.25
1-Butene	<SRL	U	1	0.42	<SRL	U	1	0.39	0.25
n-Butane	<SRL	U	1	0.42	<SRL	U	1	0.39	0.25
trans-2-Butene	<SRL	U	1	0.42	<SRL	U	1	0.39	0.25
cis-2-Butene	<SRL	U	1	0.42	<SRL	U	1	0.39	0.25
Isopentane	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
1-Pentene	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
n-Pentane	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
Isoprene	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
trans-2-Pentene	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
cis-2-Pentene	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
2,2-Dimethylbutane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
Cyclopentane	<SRL	U	1	0.34	<SRL	U	1	0.31	0.20
2,3-Dimethylbutane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
2-Methylpentane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
3-Methylpentane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
1-Hexene	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
n-Hexane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
Methylcyclopentane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
2,4-Dimethylpentane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
Benzene	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
Cyclohexane	<SRL	U	1	0.28	<SRL	U	1	0.26	0.17
2-Methylhexane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
2,3-Dimethylpentane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
3-Methylhexane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
2,2,4-Trimethylpentane	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
n-Heptane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
Methylcyclohexane	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
2,3,4-Trimethylpentane	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13

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Laboratory Analysis Report

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UNITS	**: ppb (v/v)**		

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Date Analyzed	04/08/2022				04/08/2022				
Can Dilution Factor	1.69				1.57				
	Result	**Qualifier**	**Analysis DF**		**Result**	**Qualifier**	**Analysis DF**		
Toluene	<SRL	U	1	0.24	<SRL	U	1	0.22	0.14
2-Methylheptane	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
3-Methylheptane	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
n-Octane	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
Ethylbenzene	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
m/p-Xylenes	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
Styrene	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
o-Xylene	<SRL	U	1	0.21	<SRL	U	1	0.20	0.13
Nonane	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
Isopropylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
n-Propylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
m-Ethyltoluene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
p-Ethyltoluene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
1,3,5-Trimethylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
o-Ethyltoluene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
1,2,4-Trimethylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
n-Decane	<SRL	U	1	0.17	<SRL	U	1	0.16	0.10
1,2,3-Trimethylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.17	0.11
m-Diethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.16	0.10
p-Diethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.16	0.10
n-Undecane	<SRL	U	1	0.15	<SRL	U	1	0.14	0.09
n-Dodecane	<SRL	U	1	0.14	<SRL	U	1	0.13	0.08

U - Compound was analyzed for, but was not detected at or above the SRL.

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Quality Control/Quality Assurance Report

PAMS Calibration Verification Analysis

Initial Calibration Date : 02/11/2022
Standard ID : MS1-020922-01

Instrument ID : MS01
Analysis Date : 04/04/2022
Analyst : RB

Continuing Calibration Verification

Propane	xRF	Daily RF	RPD*
	698	737	5.44

* Must be <10%

Laboratory Control Spike (LCS) / Laboratory Control Spike Duplicate (LCSD)

Propane	Sample Conc. (ppbC)	Spike Added (ppbC)	Recovery (ppbC)		% Recovery**		RPD***
			LCS	LCSD	LCS	LCSD	
	0.00	4.24	4.48	4.42	105.7	104.2	1.35

** Must be 80-120%

*** Must be <25%

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Quality Control/Quality Assurance Report

PAMS Method Blank Analysis

Matrix : Air
Units : ppbC

Instrument ID : MS01
Analysis Date : 04/04/2022
Analyst : RB

Analyte	Result	PQL
Ethylene	<PQL	1.0
Acetylene	<PQL	1.0
Ethane	<PQL	1.0
Propylene	<PQL	2.0
Propane	<PQL	1.0
Isobutane	<PQL	1.0
1-Butene	<PQL	1.0
n-Butane	<PQL	1.0
trans-2-Butene	<PQL	1.0
cis-2-Butene	<PQL	1.0
Isopentane	<PQL	1.0
1-Pentene	<PQL	1.0
n-Pentane	<PQL	1.0
Isoprene	<PQL	1.0
trans-2-Pentene	<PQL	1.0
cis-2-Pentene	<PQL	1.0
2,2-Dimethylbutane	<PQL	1.0
Cyclopentane	<PQL	1.0
2,3-Dimethylbutane	<PQL	1.0
2-Methylpentane	<PQL	1.0
3-Methylpentane	<PQL	1.0
1-Hexene	<PQL	1.0
n-Hexane	<PQL	1.0
Methylcyclopentane	<PQL	1.0
2,4-Dimethylpentane	<PQL	1.0
Benzene	<PQL	1.0
Cyclohexane	<PQL	1.0
2-Methylhexane	<PQL	1.0
2,3-Dimethylpentane	<PQL	1.0
3-Methylhexane	<PQL	1.0
2,2,4-Trimethylpentane	<PQL	1.0
n-Heptane	<PQL	1.0
Methylcyclohexane	<PQL	1.0
2,3,4-Trimethylpentane	<PQL	1.0

Analyte	Result	PQL
Toluene	<PQL	1.0
2-Methylheptane	<PQL	1.0
3-Methylheptane	<PQL	1.0
n-Octane	<PQL	1.0
Ethylbenzene	<PQL	1.0
m/p-Xylenes	<PQL	1.0
Styrene	<PQL	1.0
o-Xylene	<PQL	1.0
Nonane	<PQL	1.0
Isopropylbenzene	<PQL	1.0
n-Propylbenzene	<PQL	1.0
m-Ethyltoluene	<PQL	1.0
p-Ethyltoluene	<PQL	1.0
1,3,5-Trimethylbenzene	<PQL	1.0
o-Ethyltoluene	<PQL	1.0
1,2,4-Trimethylbenzene	<PQL	1.0
n-Decane	<PQL	1.0
1,2,3-Trimethylbenzene	<PQL	1.0
m-Diethylbenzene	<PQL	1.0
p-Diethylbenzene	<PQL	1.0
n-Undecane	<PQL	1.0
n-Dodecane	<PQL	1.0
TNMHC (ppbC)	<PQL	20

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Quality Control/Quality Assurance Report
PAMS Duplicate Analysis

AAC ID : 220708-29803
Matrix : Air
Units : ppbC

Instrument ID : MS01
Analysis Date : 04/04/2022
Analyst : RB

Analyte	Sample Analysis	Sample Duplicate	RPD
Ethylene	<PQL	<PQL	*NA*
Acetylene	<PQL	<PQL	*NA*
Ethane	28.4	28.2	0.7
Propylene	4.01	3.97	1.0
Propane	47.3	47.3	0.0
Isobutane	16.4	16.3	0.6
1-Butene	<PQL	<PQL	*NA*
n-Butane	38.3	38.2	0.3
trans-2-Butene	<PQL	<PQL	*NA*
cis-2-Butene	<PQL	<PQL	*NA*
Isopentane	16.4	16.3	0.6
1-Pentene	<PQL	<PQL	*NA*
n-Pentane	18.0	17.8	1.1
Isoprene	<PQL	<PQL	*NA*
trans-2-Pentene	<PQL	<PQL	*NA*
cis-2-Pentene	<PQL	<PQL	*NA*
2,2-Dimethylbutane	<PQL	<PQL	*NA*
Cyclopentane	<PQL	<PQL	*NA*
2,3-Dimethylbutane	<PQL	<PQL	*NA*
2-Methylpentane	5.22	5.10	2.3
3-Methylpentane	3.16	3.13	1.0
1-Hexene	<PQL	<PQL	*NA*
n-Hexane	7.79	7.65	1.8
Methylcyclopentane	4.06	4.02	1.0
2,4-Dimethylpentane	<PQL	<PQL	*NA*
Benzene	<PQL	<PQL	*NA*
Cyclohexane	3.23	3.16	2.2
2-Methylhexane	<PQL	<PQL	*NA*
2,3-Dimethylpentane	<PQL	<PQL	*NA*
3-Methylhexane	<PQL	<PQL	*NA*
2,2,4-Trimethylpentane	<PQL	<PQL	*NA*
n-Heptane	2.79	2.71	2.9
Methylcyclohexane	3.87	3.71	4.2
2,3,4-Trimethylpentane	<PQL	<PQL	*NA*
Toluene	<PQL	<PQL	*NA*
2-Methylheptane	<PQL	<PQL	*NA*
3-Methylheptane	<PQL	<PQL	*NA*
n-Octane	<PQL	<PQL	*NA*
Ethylbenzene	<PQL	<PQL	*NA*
m/p-Xylenes	<PQL	<PQL	*NA*
Styrene	<PQL	<PQL	*NA*
o-Xylene	<PQL	<PQL	*NA*
Nonane	<PQL	<PQL	*NA*
Isopropylbenzene	<PQL	<PQL	*NA*
n-Propylbenzene	<PQL	<PQL	*NA*
m-Ethyltoluene	<PQL	<PQL	*NA*
p-Ethyltoluene	<PQL	<PQL	*NA*

Analyte	Sample Analysis	Sample Duplicate	RPD
1,3,5-Trimethylbenzene	<PQL	<PQL	*NA*
o-Ethyltoluene	<PQL	<PQL	*NA*
1,2,4-Trimethylbenzene	<PQL	<PQL	*NA*
n-Decane	<PQL	<PQL	*NA*
1,2,3-Trimethylbenzene	<PQL	<PQL	*NA*
m-Diethylbenzene	<PQL	<PQL	*NA*
p-Diethylbenzene	<PQL	<PQL	*NA*
n-Undecane	<PQL	<PQL	*NA*
n-Dodecane	<PQL	<PQL	*NA*
Total PAMS (ppbC)	199	198	0.5
TNMHC (ppbC)	251	246	2.0

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