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

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 3/31/2022

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 : 220698
MATRIX : AIR
UNITS : ppb (v/v)

DATE RECEIVED : 04/04/2022
DATE REPORTED : 04/05/2022

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	220698-29357				220698-29358				
Date Sampled	03/31/2022				03/31/2022				
Date Analyzed	04/04/2022				04/04/2022				
Can Dilution Factor	1.66				1.95				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Ethylene	<SRL	U	1	0.83	<SRL	U	1	0.98	0.50
Acetylene	<SRL	U	1	0.83	<SRL	U	1	0.98	0.50
Ethane	<SRL	U	1	0.83	<SRL	U	1	0.98	0.50
Propylene	<SRL	U	1	0.55	<SRL	U	1	0.65	0.33
Propane	<SRL	U	1	0.55	<SRL	U	1	0.65	0.33
Isobutane	<SRL	U	1	0.41	<SRL	U	1	0.49	0.25
1-Butene	<SRL	U	1	0.41	<SRL	U	1	0.49	0.25
n-Butane	<SRL	U	1	0.41	<SRL	U	1	0.49	0.25
trans-2-Butene	<SRL	U	1	0.41	<SRL	U	1	0.49	0.25
cis-2-Butene	<SRL	U	1	0.41	<SRL	U	1	0.49	0.25
Isopentane	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
1-Pentene	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
n-Pentane	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
Isoprene	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
trans-2-Pentene	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
cis-2-Pentene	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
2,2-Dimethylbutane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
Cyclopentane	<SRL	U	1	0.33	<SRL	U	1	0.39	0.20
2,3-Dimethylbutane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
2-Methylpentane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
3-Methylpentane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
1-Hexene	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
n-Hexane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
Methylcyclopentane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
2,4-Dimethylpentane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
Benzene	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
Cyclohexane	<SRL	U	1	0.28	<SRL	U	1	0.33	0.17
2-Methylhexane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
2,3-Dimethylpentane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
3-Methylhexane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
2,2,4-Trimethylpentane	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
n-Heptane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
Methylcyclohexane	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
2,3,4-Trimethylpentane	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13

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Laboratory Analysis Report

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PROJECT NO	**: 220698**	**DATE REPORTED**	**: 04/05/2022**
MATRIX	**: AIR**		
UNITS	**: ppb (v/v)**		

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AAC ID	220698-29357				220698-29358				
Date Sampled	03/31/2022				03/31/2022				
Date Analyzed	04/04/2022				04/04/2022				
Can Dilution Factor	1.66				1.95				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Toluene	<SRL	U	1	0.24	<SRL	U	1	0.28	0.14
2-Methylheptane	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
3-Methylheptane	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
n-Octane	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
Ethylbenzene	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
m/p-Xylenes	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
Styrene	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
o-Xylene	<SRL	U	1	0.21	<SRL	U	1	0.24	0.13
Nonane	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
Isopropylbenzene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
n-Propylbenzene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
m-Ethyltoluene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
p-Ethyltoluene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
1,3,5-Trimethylbenzene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
o-Ethyltoluene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
1,2,4-Trimethylbenzene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
n-Decane	<SRL	U	1	0.17	<SRL	U	1	0.20	0.10
1,2,3-Trimethylbenzene	<SRL	U	1	0.18	<SRL	U	1	0.22	0.11
m-Diethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.20	0.10
p-Diethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.20	0.10
n-Undecane	<SRL	U	1	0.15	<SRL	U	1	0.18	0.09
n-Dodecane	<SRL	U	1	0.14	<SRL	U	1	0.16	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 : 220699-29760
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	<PQL	<PQL	*NA*
Propylene *	2.97	2.94	1.0
Propane	<PQL	<PQL	*NA*
Isobutane	<PQL	<PQL	*NA*
1-Butene	<PQL	<PQL	*NA*
n-Butane	<PQL	<PQL	*NA*
trans-2-Butene	<PQL	<PQL	*NA*
cis-2-Butene	<PQL	<PQL	*NA*
Isopentane	<PQL	<PQL	*NA*
1-Pentene	<PQL	<PQL	*NA*
n-Pentane	<PQL	<PQL	*NA*
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	<PQL	<PQL	*NA*
3-Methylpentane	<PQL	<PQL	*NA*
1-Hexene	<PQL	<PQL	*NA*
n-Hexane	<PQL	<PQL	*NA*
Methylcyclopentane	<PQL	<PQL	*NA*
2,4-Dimethylpentane	<PQL	<PQL	*NA*
Benzene	<PQL	<PQL	*NA*
Cyclohexane	<PQL	<PQL	*NA*
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	<PQL	<PQL	*NA*
Methylcyclohexane	<PQL	<PQL	*NA*
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*
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)	2.97	2.94	1.0
TNMHC * (ppbC)	24.7	24.1	2.5

* - Result is estimated/below the PQL; shown for duplication purposes only.

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