

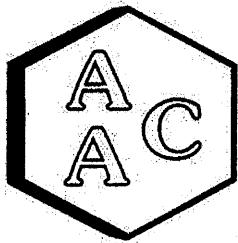
# **Volatile Organic Compound Analysis Results for Samples Collected in Nuiqsut, Alaska**

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 3/20/2022

Analysis Conducted by: Atmospheric Analysis & Consulting, Inc.

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



# Atmospheric Analysis & Consulting, Inc.

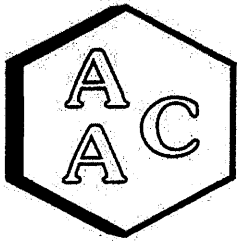
## Laboratory Analysis Report

**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220584  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

**DATE RECEIVED** : 03/22/2022  
**DATE REPORTED** : 03/23/2022

### HYDROCARBONS (C2-C12) SPECIATED

Client ID AAC ID	NUI			Sample Reporting Limit (SRL) (MRLxDFs)	NUI DUP			Sample Reporting Limit (SRL) (MRLxDFs)	Method Reporting Limit (MRL)
	220584-29222				220584-29223				
Date Sampled	03/20/2022				03/20/2022				
Date Analyzed	03/22/2022				03/22/2022				
Can Dilution Factor	1.55				1.56				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Ethylene	<SRL	U	1	0.77	<SRL	U	1	0.78	0.50
Acetylene	<SRL	U	1	0.77	<SRL	U	1	0.78	0.50
Ethane	3.83		1	0.77	2.26		1	0.78	0.50
Propylene	1.16		1	0.52	1.14		1	0.52	0.33
Propane	1.92		1	0.52	1.16		1	0.52	0.33
Isobutane	0.39		1	0.39	<SRL	U	1	0.39	0.25
1-Butene	<SRL	U	1	0.39	<SRL	U	1	0.39	0.25
n-Butane	0.70		1	0.39	<SRL	U	1	0.39	0.25
trans-2-Butene	<SRL	U	1	0.39	<SRL	U	1	0.39	0.25
cis-2-Butene	<SRL	U	1	0.39	<SRL	U	1	0.39	0.25
Isopentane	0.37		1	0.31	<SRL	U	1	0.31	0.20
1-Pentene	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
n-Pentane	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
Isoprene	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
trans-2-Pentene	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
cis-2-Pentene	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
2,2-Dimethylbutane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
Cyclopentane	<SRL	U	1	0.31	<SRL	U	1	0.31	0.20
2,3-Dimethylbutane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
2-Methylpentane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
3-Methylpentane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
1-Hexene	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
n-Hexane	0.26		1	0.26	<SRL	U	1	0.26	0.17
Methylcyclopentane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
2,4-Dimethylpentane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
Benzene	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
Cyclohexane	<SRL	U	1	0.26	<SRL	U	1	0.26	0.17
2-Methylhexane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
2,3-Dimethylpentane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
3-Methylhexane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
2,2,4-Trimethylpentane	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
n-Heptane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
Methylcyclohexane	<SRL	U	1	0.22	<SRL	U	1	0.22	0.14
2,3,4-Trimethylpentane	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13



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## Laboratory Analysis Report

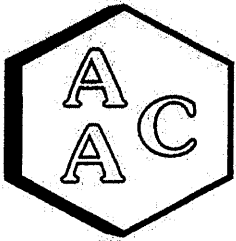
**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220584  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

**DATE RECEIVED** : 03/22/2022  
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### HYDROCARBONS (C2-C12) SPECIATED

Client ID AAC ID	NUI			Sample Reporting Limit (SRL) (MRLxDFs)	NUI DUP			Sample Reporting Limit (SRL) (MRLxDFs)	Method Reporting Limit (MRL)
	Date Sampled	Date Analyzed	Can Dilution Factor		Date Sampled	Date Analyzed	Can Dilution Factor		
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
				0.22				0.22	0.14
Toluene	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
2-Methylheptane	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
3-Methylheptane	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
n-Octane	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
Ethylbenzene	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
m/p-Xylenes	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
Styrene	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
o-Xylene	<SRL	U	1	0.19	<SRL	U	1	0.19	0.13
Nonane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
Isopropylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
n-Propylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
m-Ethyltoluene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
p-Ethyltoluene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
1,3,5-Trimethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
o-Ethyltoluene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
1,2,4-Trimethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
n-Decane	<SRL	U	1	0.15	<SRL	U	1	0.16	0.10
1,2,3-Trimethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.11
m-Diethylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.16	0.10
p-Diethylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.16	0.10
n-Undecane	<SRL	U	1	0.14	<SRL	U	1	0.14	0.09
n-Dodecane	<SRL	U	1	0.13	<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 : 03/21/2022  
Analyst : RB

### Continuing Calibration Verification

Propane	xRF	Daily RF	RPD*
	698	697	0.12

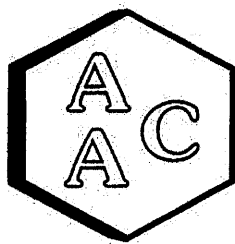
\* Must be <10%

### 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	4.23	4.24	99.8	100.0	0.24

\*\* Must be 80-120%

\*\*\* Must be <25%



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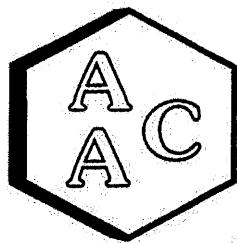
## Quality Control/Quality Assurance Report PAMS Method Blank Analysis

Matrix : Air  
Units : ppbC

Instrument ID : MS01  
Analysis Date : 03/21/2022  
Analyst : RB

Analyte	Result	PQL
Ethylene	<PQL	1.0
Acetylene	<PQL	1.0
Ethane	<PQL	1.0
Propylene	<PQL	1.0
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



# Atmospheric Analysis & Consulting, Inc.

## Quality Control/Quality Assurance Report PAMS Duplicate Analysis

AAC ID : 220479-28662  
 Matrix : Air  
 Units : ppbC

Instrument ID : MS01  
 Analysis Date : 03/21/2022  
 Analyst : RB

Analyte	Sample Analysis	Sample Duplicate	RPD
Ethylene	<PQL	<PQL	NA
Acetylene	<PQL	<PQL	NA
Ethane	5.66	6.30	11
Propylene	4.49	4.28	4.8
Propane	2.55	2.49	2.4
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

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)	12.7	13.1	3.1
TNMHC (ppbC)	54.2	75.5	33