

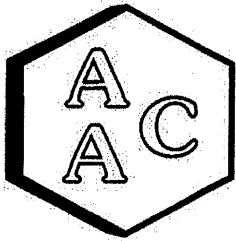
# **Volatile Organic Compound Analysis Results for Samples Collected in Nuiqsut, Alaska**

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 3/18/2022

Analysis Conducted by: Atmospheric Analysis & Consulting, Inc.

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



# Atmospheric Analysis & Consulting, Inc.

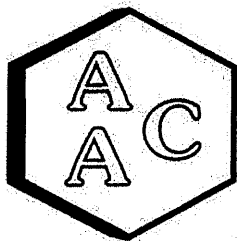
## Laboratory Analysis Report

**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220583  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

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

### 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	220583-29219				220583-29220				
Date Sampled	03/18/2022				03/18/2022				
Date Analyzed	03/22/2022				03/22/2022				
Can. Dilution Factor	1.39			1.38					
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Ethylene	<SRL	U	1	0.69	<SRL	U	1	0.69	0.50
Acetylene	<SRL	U	1	0.69	<SRL	U	1	0.69	0.50
Ethane	2.59		1	0.69	2.51		1	0.69	0.50
Propylene	0.98		1	0.46	1.02		1	0.46	0.33
Propane	1.24		1	0.46	1.32		1	0.46	0.33
Isobutane	<SRL	U	1	0.35	<SRL	U	1	0.35	0.25
1-Butene	<SRL	U	1	0.35	<SRL	U	1	0.35	0.25
n-Butane	<SRL	U	1	0.35	<SRL	U	1	0.35	0.25
trans-2-Butene	<SRL	U	1	0.35	<SRL	U	1	0.35	0.25
cis-2-Butene	<SRL	U	1	0.35	<SRL	U	1	0.35	0.25
Isopentane	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
1-Pentene	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
n-Pentane	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
Isoprene	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
trans-2-Pentene	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
cis-2-Pentene	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
2,2-Dimethylbutane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
Cyclopentane	<SRL	U	1	0.28	<SRL	U	1	0.28	0.20
2,3-Dimethylbutane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
2-Methylpentane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
3-Methylpentane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
1-Hexene	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
n-Hexane	0.23		1	0.23	<SRL	U	1	0.23	0.17
Methylcyclopentane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
2,4-Dimethylpentane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
Benzene	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
Cyclohexane	<SRL	U	1	0.23	<SRL	U	1	0.23	0.17
2-Methylhexane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
2,3-Dimethylpentane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
3-Methylhexane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
2,2,4-Trimethylpentane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
n-Heptane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
Methylcyclohexane	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
2,3,4-Trimethylpentane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13



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## Laboratory Analysis Report

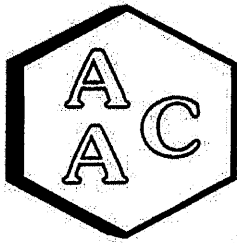
**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220583  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

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

### HYDROCARBONS (C2-C12) SPECIATED

<i>Client ID</i>	NUI			Sample Reporting Limit (SRL) (MRLxDFs)	NUI DUP			Sample Reporting Limit (SRL) (MRLxDFs)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220583-29219				220583-29220				
<i>Date Sampled</i>	03/18/2022				03/18/2022				
<i>Date Analyzed</i>	03/22/2022				03/22/2022				
<i>Can Dilution Factor</i>	1.39				1.38				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Toluene	<SRL	U	1	0.20	<SRL	U	1	0.20	0.14
2-Methylheptane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
3-Methylheptane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
n-Octane	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
Ethylbenzene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
m/p-Xylenes	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
Styrene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
o-Xylene	<SRL	U	1	0.17	<SRL	U	1	0.17	0.13
Nonane	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
Isopropylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
n-Propylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
m-Ethyltoluene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
p-Ethyltoluene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
1,3,5-Trimethylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
o-Ethyltoluene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
1,2,4-Trimethylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
n-Decane	<SRL	U	1	0.14	<SRL	U	1	0.14	0.10
1,2,3-Trimethylbenzene	<SRL	U	1	0.15	<SRL	U	1	0.15	0.11
m-Diethylbenzene	<SRL	U	1	0.14	<SRL	U	1	0.14	0.10
p-Diethylbenzene	<SRL	U	1	0.14	<SRL	U	1	0.14	0.10
n-Undecane	<SRL	U	1	0.13	<SRL	U	1	0.13	0.09
n-Dodecane	<SRL	U	1	0.12	<SRL	U	1	0.12	0.08

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



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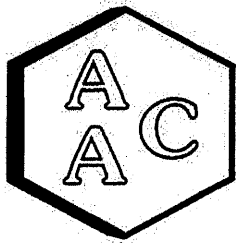
## Laboratory Analysis Report

**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220583  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

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

### HYDROCARBONS (C2-C12) SPECIATED

<i>Client ID</i>		<i>NUI UNL</i>			<b>Sample Reporting Limit (SRL) (MRLxDFs)</b>	<b>Method Reporting Limit (MRL)</b>
<i>AAC ID</i>		220583-29221				
<i>Date Sampled</i>		03/18/2022				
<i>Date Analyzed</i>		03/22/2022				
<i>Con Dilution Factor</i>		1.35				
	<b>Result</b>	<b>Qualifier</b>	<b>Analysis DF</b>			
Ethylene	1.09		1	0.67	0.50	
Acetylene	0.81		1	0.67	0.50	
Ethane	3.32		1	0.67	0.50	
Propylene	1.36		1	0.45	0.33	
Propane	2.24		1	0.45	0.33	
Isobutane	0.62		1	0.34	0.25	
1-Butene	<SRL	U	1	0.34	0.25	
n-Butane	0.93		1	0.34	0.25	
trans-2-Butene	<SRL	U	1	0.34	0.25	
cis-2-Butene	<SRL	U	1	0.34	0.25	
Isopentane	0.99		1	0.27	0.20	
1-Pentene	<SRL	U	1	0.27	0.20	
n-Pentane	0.39		1	0.27	0.20	
Isoprene	<SRL	U	1	0.27	0.20	
trans-2-Pentene	<SRL	U	1	0.27	0.20	
cis-2-Pentene	<SRL	U	1	0.27	0.20	
2,2-Dimethylbutane	<SRL	U	1	0.22	0.17	
Cyclopentane	<SRL	U	1	0.27	0.20	
2,3-Dimethylbutane	<SRL	U	1	0.22	0.17	
2-Methylpentane	0.23		1	0.22	0.17	
3-Methylpentane	0.24		1	0.22	0.17	
1-Hexene	<SRL	U	1	0.22	0.17	
n-Hexane	0.64		1	0.22	0.17	
Methylcyclopentane	<SRL	U	1	0.22	0.17	
2,4-Dimethylpentane	<SRL	U	1	0.19	0.14	
Benzene	<SRL	U	1	0.22	0.17	
Cyclohexane	<SRL	U	1	0.22	0.17	
2-Methylhexane	<SRL	U	1	0.19	0.14	
2,3-Dimethylpentane	<SRL	U	1	0.19	0.14	
3-Methylhexane	<SRL	U	1	0.19	0.14	
2,2,4-Trimethylpentane	0.18		1	0.17	0.13	
n-Heptane	<SRL	U	1	0.19	0.14	
Methylcyclohexane	<SRL	U	1	0.19	0.14	
2,3,4-Trimethylpentane	<SRL	U	1	0.17	0.13	



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## Laboratory Analysis Report

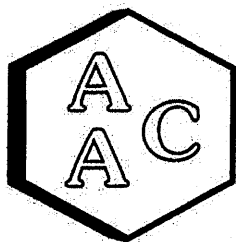
**CLIENT** : SLR International Corporation  
**PROJECT NO** : 220583  
**MATRIX** : AIR  
**UNITS** : ppb (v/v)

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

### HYDROCARBONS (C2-C12) SPECIATED

<i>Client ID</i>	NUI UNL			Sample Reporting Limit (SRL) (MRLxDFs)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220583-29221				
<i>Date Sampled</i>	03/18/2022				
<i>Date Analyzed</i>	03/22/2022				
<i>Can Dilution Factor</i>	1.35				
	Result	Qualifier	Analysis DF		
Toluene	0.33		1	0.19	0.14
2-Methylheptane	<SRL	U	1	0.17	0.13
3-Methylheptane	<SRL	U	1	0.17	0.13
n-Octane	<SRL	U	1	0.17	0.13
Ethylbenzene	<SRL	U	1	0.17	0.13
m/p-Xylenes	0.23		1	0.17	0.13
Styrene	<SRL	U	1	0.17	0.13
o-Xylene	<SRL	U	1	0.17	0.13
Nonane	<SRL	U	1	0.15	0.11
Isopropylbenzene	<SRL	U	1	0.15	0.11
n-Propylbenzene	<SRL	U	1	0.15	0.11
m-Ethyltoluene	<SRL	U	1	0.15	0.11
p-Ethyltoluene	<SRL	U	1	0.15	0.11
1,3,5-Trimethylbenzene	<SRL	U	1	0.15	0.11
o-Ethyltoluene	<SRL	U	1	0.15	0.11
1,2,4-Trimethylbenzene	<SRL	U	1	0.15	0.11
n-Decane	<SRL	U	1	0.13	0.10
1,2,3-Trimethylbenzene	<SRL	U	1	0.15	0.11
m-Diethylbenzene	<SRL	U	1	0.13	0.10
p-Diethylbenzene	<SRL	U	1	0.13	0.10
n-Undecane	<SRL	U	1	0.12	0.09
n-Dodecane	<SRL	U	1	0.11	0.08

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



# Atmospheric Analysis & Consulting, Inc.

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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

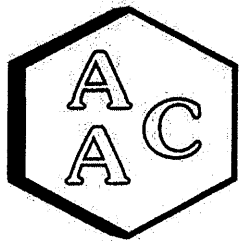
\* Must be <10%

### 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	

\*\* Must be 80-120%

\*\*\* Must be <25%



# Atmospheric Analysis & Consulting, Inc.

## Quality Control/Quality Assurance Report

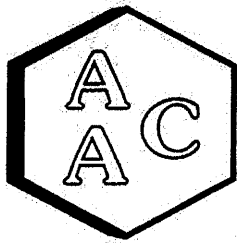
### PAMS Method Blank Analysis

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