Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 06, 2019

Caerus Oil and Gas

Sample Delivery Group:	L1125323
Samples Received:	07/26/2019
Project Number:	P27
Description:	P27 Release
Site:	P27
Report To:	Blair Rollins 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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20190725-P27 FL NW WALL L1125323-01 Solid

Collected by: Matt Kasten
Collected date/time: 07/25/19 10:55
Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1323190	1	07/30/19 09:58	08/05/19 14:29	DWR	Mt. Juliet, TN

20190725-P27 FL NE WALL L1125323-02 Solid

Collected by: Matt Kasten
Collected date/time: 07/25/19 11:00
Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1323190	1	07/30/19 09:58	08/05/19 14:47	DWR	Mt. Juliet, TN

20190725-P27 FL BOT L1125323-03 Solid

Collected by: Matt Kasten
Collected date/time: 07/25/19 11:05
Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1323190	1	07/30/19 09:58	08/05/19 15:06	DWR	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0548		0.00100	1	08/05/2019 14:29	WG1323190
(S) Toluene-d8	*97.9*		*75.0-131*		*08/05/2019 14:29*	WG1323190
(S) 4-Bromofluorobenzene	*115*		*67.0-138*		*08/05/2019 14:29*	WG1323190
(S) 1,2-Dichloroethane-d4	*112*		*70.0-130*		*08/05/2019 14:29*	WG1323190

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0710		0.00100	1	08/05/2019 14:47	WG1323190
(S) Toluene-d8	*100*		*75.0-131*		*08/05/2019 14:47*	WG1323190
(S) 4-Bromofluorobenzene	*136*		*67.0-138*		*08/05/2019 14:47*	WG1323190
(S) 1,2-Dichloroethane-d4	*114*		*70.0-130*		*08/05/2019 14:47*	WG1323190

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0271		0.00100	1	08/05/2019 15:06	WG1323190
(S) Toluene-d8	*101*		*75.0-131*		*08/05/2019 15:06*	WG1323190
(S) 4-Bromofluorobenzene	*113*		*67.0-138*		*08/05/2019 15:06*	WG1323190
(S) 1,2-Dichloroethane-d4	*113*		*70.0-130*		*08/05/2019 15:06*	WG1323190

Method Blank (MB)

(MB) R3437710-2 08/05/19 12:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
(S) Toluene-d8	*103*			*75.0-131*
(S) 4-Bromofluorobenzene	*92.2*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*112*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3437710-1 08/05/19 11:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.119	95.5	70.0-123	
(S) Toluene-d8			*100*	*75.0-131*	
(S) 4-Bromofluorobenzene			*93.5*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*120*	*70.0-130*	

L1123976-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1123976-03 08/05/19 17:01 • (MS) R3437710-3 08/05/19 19:14 • (MSD) R3437710-4 08/05/19 19:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.113	0.0603	90.7	48.2	1	10.0-149		J3	61.1	37
(S) Toluene-d8					*101*	*99.2*		*75.0-131*				
(S) 4-Bromofluorobenzene					*97.0*	*95.1*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*115*	*115*		*70.0-130*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

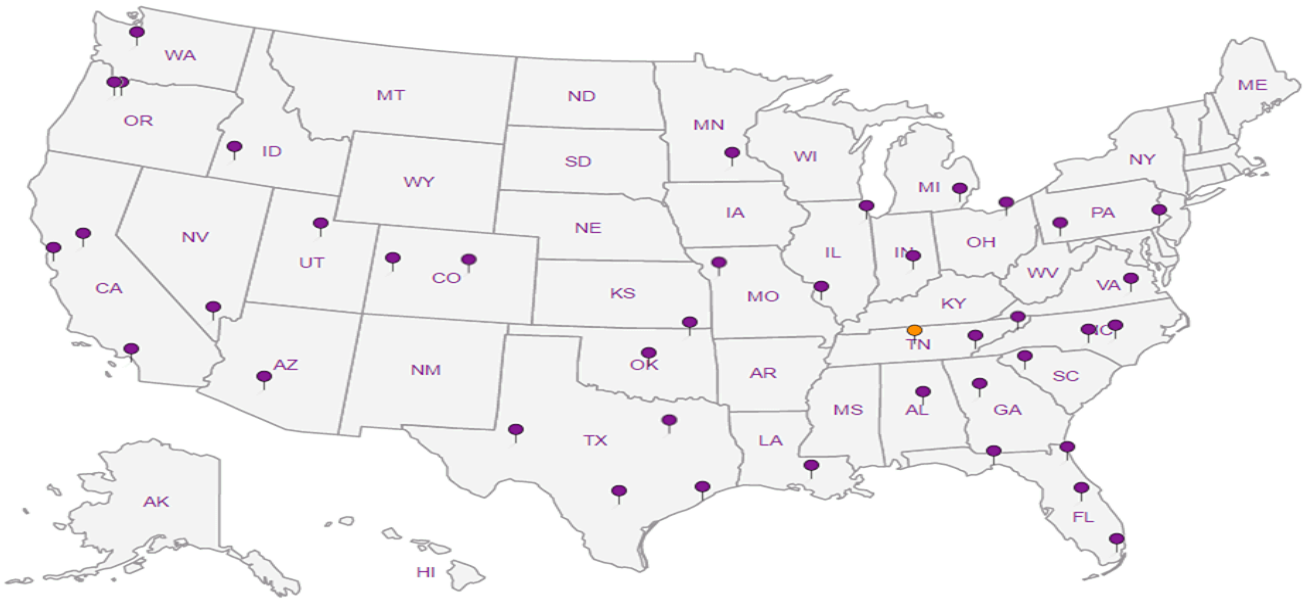
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Company Name/Address:
Caerus
143 Diamond Avenue
Parachute, CO 81635

Billing Information:
Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Report to: **Brett Middleton**

Email To: bmiddleton@caerusoilandgas.com

Project Description: P27 RELEASE

City/State Collected: PARACHUTE, CO

Phone: 970-987-4650
Fax:

Client Project # P27

Lab Project #

Collected by (print): MATT KASTEN

Site/Facility ID # P27

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___ No ✓ Yes
FAX? ✓ No ___ Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX/GRO/DRO - 8021/8015	SV8270PAHSIM - 8270SIM	SPCON - 9050AMod	SAR - Calc.	RCRA8 Metals + Cu, Ni, and Zn - 6010/7470	CR6SS - 3060A/7196	CR3 - Calc.	pH	Rem./Contaminant	Sample # (lab only)
20190725-P27 FL NW WALL	Grab	SS	7'	7/25/19	1055	2	X			X				X		-01
20190725-P27 FL NE WALL			7'		1100	2	X			X				X		-02
20190725-P27 FL BOT			8'		1105	2	X			X				X		-03

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks: * CC BLAIR ROLLINS & JAKE JANECIK ALSO

pH ___ Temp ___
Flow ___ Other ___

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: ABBF °C 4.6, 4.7 Bottles Received: 6

Date: 7/26/19 Time: 8:45

Received for lab by: (Signature) Haley Nelson

Relinquished by : (Signature)	Date:	Time:	Received By: (Signature)
	7/25/19	1800	
Relinquished by : (Signature)	Date: 7/25/19	Time: 1730	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Haley Nelson

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1175323 N 8/5/19
B242
L1175323

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Hold #
Condition: (lab use only)
RAD SCREEN: <0.5 mR/hr
COC Seal Intact: ___ Y ___ N ✓ NA
pH Checked: NCF:

Andy Vann

From: Chris Ward
Sent: Monday, August 05, 2019 12:12 PM
To: Project Service
Cc: Sample Storage; Due VOC; SOIL PREPREP
Subject: L1122592 *CAERUSPCO* Rush Relog due 8/6

Importance: High

Please relog this SDG for V8260BTEX due 8/6

VOCs,
Is that TAT doable?

Thanks,

Chris Ward
Project Manager
Pace Analytical National Center for Testing & Innovation
12065 Lebanon Road | Mt. Juliet, TN 37122
cward@pacenational.com | www.pacenational.com
615.773.9712

ESC Lab Sciences is now Pace Analytical National Center for Testing & Innovation! Please make note of my new email address and website