

**United States
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-Q

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended September 30, 2023
or

TRANSITION REPORT PURSUANT TO 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to
Commission File Number: 001-37822

Advanced Emissions Solutions, Inc.

(Exact name of registrant as specified in its charter)

Delaware

27-5472457

(State or other jurisdiction of
incorporation or organization)

(I.R.S. Employer
Identification No.)

8051 E. Maplewood Ave, Suite 210, Greenwood Village, CO

80111

(Address of principal executive offices)

(Zip Code)

(720) 598-3500

(Registrant's telephone number, including area code)

Not Applicable

(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Class

Trading Symbol

Name of each exchange on which registered

Common stock, par value \$0.001 per share

ADES

Nasdaq Global Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

As of November 2, 2023, there were 33,180,907 outstanding shares of Advanced Emissions Solutions, Inc. common stock, par value \$0.001 per share.

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Part I. – FINANCIAL INFORMATION

Item 1. Consolidated Financial Statements

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Balance Sheets
(Unaudited)

<i>(in thousands, except share data)</i>	<i>As of</i>	
	<i>September 30, 2023</i>	<i>December 31, 2022</i>
ASSETS		
Current assets:		
Cash	\$ 52,529	\$ 66,432
Receivables, net	14,225	13,864
Inventories, net	18,549	17,828
Prepaid expenses and other current assets	6,171	7,538
Total current assets	91,474	105,662
Restricted cash, long-term	8,792	10,000
Property, plant and equipment, net of accumulated depreciation of \$17,110 and \$11,897, respectively	85,709	34,855
Other long-term assets, net	44,629	30,647
Total Assets	\$ 230,604	\$ 181,164
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	\$ 13,972	\$ 16,108
Current portion of debt obligations	1,991	1,131
Other current liabilities	6,061	6,645
Total current liabilities	22,024	23,884
Long-term debt obligations, net of current portion	19,179	3,450
Other long-term liabilities	15,107	13,851
Total Liabilities	56,310	41,185
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Preferred stock: par value of \$0.001 per share, 50,000,000 shares authorized including Series A Convertible Preferred Stock: par value \$0.001 per share, 8,900,000 shares authorized, none issued and outstanding	—	—
Common stock: par value of \$0.001 per share, 100,000,000 shares authorized, 37,799,053 and 23,788,319 shares issued, and 33,180,907 and 19,170,173 shares outstanding at September 30, 2023 and December 31, 2022, respectively	38	24
Treasury stock, at cost: 4,618,146 and 4,618,146 shares as of September 30, 2023 and December 31, 2022, respectively	(47,692)	(47,692)
Additional paid-in capital	153,695	103,698
Retained earnings	68,253	83,949
Total Stockholders' Equity	174,294	139,979
Total Liabilities and Stockholders' Equity	\$ 230,604	\$ 181,164

See Notes to the Condensed Consolidated Financial Statements

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Operations
(Unaudited)

<i>(in thousands, except per share data)</i>	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Revenues:				
Consumables	\$ 29,829	\$ 28,437	\$ 71,079	\$ 79,578
Total revenues	29,829	28,437	71,079	79,578
Operating expenses:				
Consumables cost of revenue, exclusive of depreciation and amortization	20,707	21,575	53,218	62,992
Payroll and benefits	4,228	2,313	12,482	7,458
Legal and professional fees	1,654	3,668	8,060	7,395
General and administrative	3,054	1,833	9,177	5,662
Depreciation, amortization, depletion and accretion	2,711	1,671	7,276	4,765
Gain on sale of Marshall Mine, LLC	—	—	(2,695)	—
Total operating expenses	32,354	31,060	87,518	88,272
Operating loss	(2,525)	(2,623)	(16,439)	(8,694)
Other income (expense):				
Earnings from equity method investments	412	—	1,512	3,222
Interest expense	(787)	(83)	(2,155)	(259)
Other	725	315	1,510	(19)
Total other income	350	232	867	2,944
Loss before income taxes	(2,175)	(2,391)	(15,572)	(5,750)
Income tax benefit	—	—	33	—
Net loss	\$ (2,175)	\$ (2,391)	\$ (15,539)	\$ (5,750)
Loss per common share (Note 1):				
Basic	\$ (0.07)	\$ (0.13)	\$ (0.56)	\$ (0.31)
Diluted	\$ (0.07)	\$ (0.13)	\$ (0.56)	\$ (0.31)
Weighted-average number of common shares outstanding:				
Basic	31,807	18,487	27,894	18,435
Diluted	31,807	18,487	27,894	18,435

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Changes in Stockholders' Equity
(Unaudited)

<i>(Amounts in thousands, except share data)</i>	Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings	Total Stockholders' Equity
	Shares	Amount	Shares	Amount			
Balances, January 1, 2023	23,788,319	\$ 24	(4,618,146)	\$ (47,692)	\$ 103,698	\$ 83,949	\$ 139,979
Stock-based compensation	483,242	—	—	—	563	—	563
Issuance of common stock pursuant to Arq Acquisition, net of offering costs	3,814,864	4	—	—	12,433	—	12,437
Issuance of common stock related to PIPE Investment, net of offering costs	3,842,315	4	—	—	15,216	—	15,220
Issuance of warrant	—	—	—	—	826	—	826
Repurchase of common shares to satisfy minimum tax withholdings	(74,104)	—	—	—	(146)	—	(146)
Preferred stock dividends declared on redeemable preferred stock	—	—	—	—	—	(157)	(157)
Net loss	—	—	—	—	—	(7,508)	(7,508)
Balances, March 31, 2023	<u>31,854,636</u>	<u>\$ 32</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 132,590</u>	<u>\$ 76,284</u>	<u>\$ 161,214</u>
Stock-based compensation	(16,430)	—	—	—	545	—	545
Issuance of common stock upon conversion of preferred stock	5,362,926	5	—	—	18,921	—	18,926
Repurchase of common shares to satisfy minimum tax withholdings	(6,973)	—	—	—	(14)	—	(14)
Net loss	—	—	—	—	—	(5,856)	(5,856)
Balances, June 30, 2023	<u>37,194,159</u>	<u>\$ 37</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 152,042</u>	<u>\$ 70,428</u>	<u>\$ 174,815</u>
Stock-based compensation	105,244	—	—	—	702	—	702
Issuance of common stock to related party	527,779	1	—	—	999	—	1,000
Repurchase of common shares to satisfy minimum tax withholdings	(28,129)	—	—	—	(48)	—	(48)
Net loss	—	—	—	—	—	(2,175)	(2,175)
Balances, September 30, 2023	<u>37,799,053</u>	<u>\$ 38</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 153,695</u>	<u>\$ 68,253</u>	<u>\$ 174,294</u>

<i>(Amounts in thousands, except share data)</i>	Common Stock		Treasury Stock		Additional Paid-in Capital	Retained Earnings	Total Stockholders' Equity
	Shares	Amount	Shares	Amount			
Balances, January 1, 2022	23,460,212	\$ 23	(4,618,146)	\$ (47,692)	\$ 102,106	\$ 92,864	\$ 147,301
Stock-based compensation	323,742	1	—	—	463	—	464
Repurchase of common shares to satisfy minimum tax withholdings	(59,736)	—	—	—	(382)	—	(382)
Net loss	—	—	—	—	—	(3,033)	(3,033)
Balances, March 31, 2022	<u>23,724,218</u>	<u>\$ 24</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 102,187</u>	<u>\$ 89,831</u>	<u>\$ 144,350</u>
Stock-based compensation	(30,459)	—	—	—	484	—	484
Repurchase of common shares to satisfy minimum tax withholdings	(551)	—	—	—	(3)	—	(3)
Net loss	—	—	—	—	—	(326)	(326)
Balances, June 30, 2022	<u>23,693,208</u>	<u>\$ 24</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 102,668</u>	<u>\$ 89,505</u>	<u>\$ 144,505</u>
Stock-based compensation	37,291	—	—	—	507	—	507
Cash dividends canceled on common stock	—	—	—	—	—	2	2
Net loss	—	—	—	—	—	(2,391)	(2,391)
Balances, September 30, 2022	<u>23,730,499</u>	<u>\$ 24</u>	<u>(4,618,146)</u>	<u>\$ (47,692)</u>	<u>\$ 103,175</u>	<u>\$ 87,116</u>	<u>\$ 142,623</u>

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(Unaudited)

(in thousands)	Nine Months Ended September 30,	
	2023	2022
Cash flows from operating activities		
Net loss	\$ (15,539)	\$ (5,750)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities:		
Depreciation, amortization, depletion and accretion	7,276	4,765
Gain on sale of Marshall Mine, LLC	(2,695)	—
Operating lease expense	2,061	1,953
Stock-based compensation expense	1,810	1,455
Earnings from equity method investments	(1,512)	(3,222)
Amortization of debt discount and debt issuance costs	395	—
Other non-cash items, net	—	438
Changes in operating assets and liabilities:		
Receivables and related party receivables	(359)	1,199
Prepaid expenses and other assets	3,595	(991)
Inventories, net	(811)	(7,222)
Other long-term assets, net	(3,646)	2,136
Accounts payable and accrued expenses	(12,033)	1,827
Other current liabilities	148	(184)
Operating lease liabilities	(140)	1,445
Other long-term liabilities	305	206
Distributions from equity method investees, return on investment	—	2,297
Net cash (used in) provided by operating activities	(21,145)	352
Cash flows from investing activities		
Acquisition of property, plant, equipment, and intangible assets, net	(17,008)	(6,178)
Cash and restricted cash acquired in business acquisition	2,225	—
Payment for disposal of Marshall Mine, LLC	(2,177)	—
Acquisition of mine development costs	(1,856)	(345)
Distributions from equity method investees in excess of cumulative earnings	1,512	3,316
Proceeds from sale of property and equipment	—	1,241
Net cash used in investing activities	(17,304)	(1,966)
Cash flows from financing activities		
Net proceeds from common stock issued in PIPE	15,220	—
Net proceeds from Term Loan, related party, net of discount and issuance costs	8,522	—
Net proceeds from common stock issuance, related party	1,000	—
Principal payments on finance lease obligations	(855)	(913)
Principal payments on Arq Loan	(341)	—
Repurchase of common stock to satisfy tax withholdings	(208)	(385)
Dividends paid on common stock	—	(45)
Net cash provided by (used) in financing activities	23,338	(1,343)
Decrease in Cash and Restricted Cash	(15,111)	(2,957)
Cash and Restricted Cash, beginning of period	76,432	88,780
Cash and Restricted Cash, end of period	\$ 61,321	\$ 85,823
Supplemental disclosure of non-cash investing and financing activities:		
Equity issued as consideration for acquisition of business	\$ 31,206	\$ —
Change in accrued purchases for property and equipment	\$ 255	\$ 339
Paid-in-kind dividend on Series A Preferred Stock	\$ 157	\$ —
Acquisition of property and equipment under finance lease	\$ —	\$ 1,641

See Notes to the Condensed Consolidated Financial Statements.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Note 1 - Organization and Basis of Presentation

Advanced Emissions Solutions, Inc. ("ADES" or the "Company") is a Delaware corporation with its principal office located in Greenwood Village, Colorado, manufacturing and logistics operations located in Louisiana and a manufacturing facility located in Kentucky. The Company is an environmental technology company and has been principally engaged in the sale of consumable air and water treatment solutions including activated carbon ("AC") and chemical technologies. The Company's proprietary technologies in the advanced purification technologies ("APT") market enable customers to reduce air and water contaminants, including mercury and other pollutants, to maximize utilization levels and to improve operating efficiencies to meet the challenges of existing and pending air quality and water regulations. The Company manufactures and sells AC and other chemicals used to capture and remove contaminants for coal-fired power generation and for industrial, municipal and remediation water treatment markets. The Company also owns an associated lignite mine ("Five Forks Mine") that currently supplies the primary raw material for manufacturing AC.

Basis of Presentation

The accompanying Condensed Consolidated Financial Statements of ADES are unaudited and have been prepared in conformity with accounting principles generally accepted in the United States ("U.S. GAAP") and with Article 10 of Regulation S-X of the Securities and Exchange Commission. In compliance with those instructions, certain information and footnote disclosures normally included in annual consolidated financial statements prepared in accordance with U.S. GAAP have been condensed or omitted.

The unaudited Condensed Consolidated Financial Statements of ADES in this quarterly report ("Quarterly Report") are presented on a consolidated basis and include ADES and its wholly-owned subsidiaries (collectively, the "Company"). Also included within the unaudited Condensed Consolidated Financial Statements are the Company's unconsolidated equity investments, Tinuum Group and Tinuum Services, which are accounted for under the equity method of accounting, and Highview Enterprises Limited (the "Highview Investment"), which is accounted for in accordance with U.S. GAAP applicable to equity investments that do not qualify for the equity method of accounting.

Results of operations and cash flows for the interim periods are not necessarily indicative of the results that may be expected for the entire year. All significant intercompany transactions and accounts were eliminated in consolidation for all periods presented in this Quarterly Report.

In the opinion of management, these Condensed Consolidated Financial Statements include all normal and recurring adjustments considered necessary for a fair presentation of the results of operations, financial position, stockholders' equity and cash flows for the interim periods presented. These Condensed Consolidated Financial Statements should be read in conjunction with the Company's Annual Report on Form 10-K for the year ended December 31, 2022 (the "2022 Form 10-K"). Significant accounting policies disclosed therein have not changed.

Earnings (Loss) Per Share

Basic earnings (loss) per share is computed using the weighted-average number of shares of common stock outstanding during the reporting period. Diluted earnings (loss) per share is computed in a manner consistent with that of basic earnings per share, while considering other potentially dilutive securities.

For the three and nine months ended September 30, 2023 and 2022, potentially dilutive securities consist of unvested restricted stock awards ("RSAs"), stock options and contingent performance stock units ("PSUs").

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
(Unaudited)

The following table sets forth the calculations of basic and diluted loss per share:

<i>(in thousands, except per share amounts)</i>	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Net loss	\$ (2,175)	\$ (2,391)	\$ (15,539)	\$ (5,750)
Less: Dividends declared on redeemable preferred stock	—	—	157	—
Loss attributable to common stockholders	\$ (2,175)	\$ (2,391)	\$ (15,696)	\$ (5,750)
Basic weighted-average common shares outstanding	31,807	18,487	27,894	18,435
Add: dilutive effect of equity instruments	—	—	—	—
Diluted weighted-average shares outstanding	31,807	18,487	27,894	18,435
Loss per share - basic	\$ (0.07)	\$ (0.13)	\$ (0.56)	\$ (0.31)
Loss per share - diluted	\$ (0.07)	\$ (0.13)	\$ (0.56)	\$ (0.31)

For the three and nine months ended September 30, 2023 and 2022, potentially dilutive securities of 2.3 million and 0.8 million and 1.4 million and 0.7 million shares of common stock, respectively, are outstanding but are not included in the calculation of diluted net loss per share because the effect would be anti-dilutive.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. There have been no changes in the Company's critical accounting estimates from those that were disclosed in the 2022 Form 10-K. Actual results could differ from these estimates.

Risks and Uncertainties

The Company is principally dependent on the operations of its APT business and its cash on hand to provide liquidity over the near and long term. The Company's revenues, sales volumes, earnings and cash flows are significantly affected by prices of competing power generation sources such as natural gas and renewable energy. During periods of low natural gas prices, natural gas provides a competitive alternative to coal-fired power generation and therefore, coal consumption for purposes of power generation may be reduced, which in turn reduces the demand for the Company's products. However, during periods of higher prices for competing power generation sources, there is an increase in coal consumption and thus demand for the Company's products also increases.

In addition, coal consumption for purposes of power generation and demand for the Company's products are affected by the demand for electricity, which is higher in the warmer and colder months of the year. As a result, the Company's interim period results are subject to seasonal variations whereby its revenues and cost of revenues tend to be higher in its first and third fiscal quarters compared to its second and fourth fiscal quarters. Abnormal temperatures during the summer and winter months may significantly affect coal consumption and impurities within various municipalities' water sources, and thus impact the demand for the Company's products.

As of September 30, 2023, the Company holds cash at two financial institutions that exceed the Federal Deposit Insurance Corporation ("FDIC") limits (currently \$250 thousand). If a financial institution was unable to perform its obligations, the Company would be at risk regarding the amount of cash held in excess of the FDIC limits.

Concentration of credit risk

The Company is exposed to concentrations of credit risk primarily related to its customer accounts receivable. The Company regularly monitors its credit risk to mitigate the possibility of current and future exposures resulting in a loss. Historically, the losses related to credit risk have been immaterial. The Company evaluates the creditworthiness of its customers prior to entering into agreements to sell its products and, as necessary, throughout the life of the customer relationship.

Reclassifications

Certain balances have been reclassified from the prior year to conform to the current year presentation. Such reclassifications had no effect on the Company's results of operations or financial position in any of the periods presented.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Note 2 - Arq Acquisition

On February 1, 2023 (the "Acquisition Date"), the Company entered into a Securities Purchase Agreement (the "Purchase Agreement") with Arq Limited ("Arq Ltd."), a company incorporated under the laws of Jersey, pursuant to which the Company acquired all of the direct and indirect equity interests of Arq Ltd.'s subsidiaries (the "Arq Acquisition," and hereafter referred to as "Arq") in exchange for consideration (the "Purchase Consideration") totaling \$31.2 million, and consisting of (i) 3,814,864 shares of the Company's common stock, par value \$ 0.001 per share (the "Common Stock") and (ii) 5,294,462 preferred shares (the "Preferred Shares") of the Company's Series A Convertible Preferred Stock, par value \$ 0.001 per share (the "Series A Preferred Stock").

Arq's principal office is located in Corbin, Kentucky near its production facility ("the Corbin Facility"). The Corbin location consists of bituminous coal reserves and a manufacturing facility used to recover and purify the bituminous coal fines for sale or further conversion to value-added specialty chemicals. Arq is a pre-revenue, environmental technology company that has developed a process for transforming coal waste into a purified, microfine carbon powder, known as Arq powder™ ("Arq Powder"). The Company expects to begin using Arq Powder to produce granular activated carbon products in the second half of 2024.

The Company accounted for the Arq Acquisition as an acquisition of a business. The total Purchase Consideration was \$ 31.2 million and was allocated to the acquired assets and assumed liabilities of Arq based on their estimated fair values as of the Acquisition Date. The Purchase Consideration was comprised of the fair values as of the Acquisition Date of 3,814,864 shares of Common Stock, valued at \$ 12.4 million, and 5,294,462 Preferred Shares, valued at \$18.8 million. The Company also incurred \$ 8.7 million in acquisition-related costs, which were expensed as incurred and included in the "General and administrative" and "Legal and professional fees" line items in the Statements of Operations.

The following table provides the final purchase price allocation to the assets acquired and liabilities assumed as of the Acquisition Date:

<i>(in thousands)</i>	Purchase Price Allocation	
Fair value of assets acquired:		
Cash	\$	1,411
Prepaid expenses and other current assets		2,229
Restricted cash, long-term		814
Property, plant and equipment, net		39,159
Other long-term assets, net		11,717
Amount attributable to assets acquired		<u>55,330</u>
Fair Value of liabilities assumed:		
Accounts payable and accrued expenses		9,806
Current portion of long-term debt		494
Other current liabilities		103
Long-term debt, net of current portion		9,199
Other long-term liabilities		4,523
Amount attributable to liabilities assumed		<u>24,125</u>
Net assets acquired	\$	<u>31,205</u>

The following represents the intangible asset identified as part of the Arq Acquisition and which is included in "Other long-term-assets, net" in the table above:

<i>(in thousands)</i>	Amount	Weighted Average Useful Life (years)
Developed technology	\$ 7,700	20

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Series A Preferred Stock

In connection with the issuance of the Series A Preferred Stock pursuant to the Purchase Agreement, the Company filed the Certificate of Designations of Preferred Stock for the Series A Preferred Stock (the "Certificate of Designations") with the Secretary of State of the State of Delaware. Under the Certificate of Designations, 8.9 million preferred shares were designated as Series A Preferred Stock.

On June 13, 2023 (the "Conversion Date"), the Company's stockholders approved the conversion of all of the outstanding shares of Series A Preferred Stock, including the "Escrow Shares," as defined below, and the corresponding issuance of shares of Common Stock. Upon such approval, each outstanding share of Series A Preferred Stock was automatically converted into the number of shares of Common Stock described below. Each share of Series A Preferred Stock was deemed to have an original issue price of \$4.00 per share (the "Original Issue Amount"). The number of shares of Common Stock issued upon conversion of each share of Series A Preferred Stock was equal to the product of (i) the sum of (A) the Original Issue Amount plus (B) an amount equal to the cumulative amount of the accrued and unpaid dividends on such share at such time divided by (ii) the Original Issue Amount, subject to adjustment.

Holders of the Series A Preferred Stock were entitled to receive cumulative dividends, which accrued quarterly on the last day of each applicable quarter (whether or not declared or funds for their payment are lawfully available) and were payable quarterly, in arrears, on the earlier to occur of (a) the date any dividend is paid to holders of Common Stock with respect to such quarter and (b) 30 days after the end of each quarter (the "Series A Quarterly Dividend") at the rate per share of Series A Preferred Stock equal to the greater of (i) if the Company declared a cash dividend on the Common Stock with respect to such quarter, the amount of the cash dividend that would be received by a holder of Common Stock in which such share of Series A Preferred Stock would be convertible on the record date for such cash dividend and (ii) an annual rate (the "Rate") of 8.0% of the Original Issue Amount compounded quarterly with respect to such quarter.

On March 31, 2023, the Company declared a dividend of 68,464 Series A PIK Shares with respect to the accrued dividends on the Preferred Shares for the first quarter of 2023 (the "First Quarter PIK Dividend"). The First Quarter PIK Dividend was recorded at the estimated fair value of \$0.2 million as of March 31, 2023 and was paid on April 21, 2023.

Under the terms of the Purchase Agreement, a total of 833,914 Preferred Shares, were held in escrow (the "Preferred Escrow Shares") based on a contingent redemption feature, (the "Contingent Redemption Feature," as defined below). The fair value of the Preferred Shares issued was determined to be \$3.46 per Preferred Share on the Acquisition Date (the "Preferred Share Price") plus the value of the Contingent Redemption Feature related to the Escrow Shares. The Escrow Shares were converted into shares of Common Stock on the Conversion Date and continue to be held in escrow (the "Escrow Common Shares").

The Escrow Common Shares are being withheld pending a determination by the IRS that no tax withholding is required on the Purchase Consideration issued to Arq Ltd. (the "Arq Ltd. Tax Liability"). The Company estimated the fair value of the potential Arq Ltd. Tax Liability at \$3.3 million. In the event that the IRS determines that no withholding is required by Arq Ltd. in connection with the Purchase Consideration received by Arq Ltd., all of the Escrow Common Shares will be released and delivered to Arq Ltd. In the event that the IRS determines that any amount of withholding is required by Arq Ltd., the Company has agreed to redeem a sufficient number of Escrow Common Shares to fund the required payment to the IRS, and that number of Escrow Common Shares will be returned to the Company. The number of Escrow Common Shares to be returned to the Company is equal to the required withholding amount divided by the Original Issue Amount, not to exceed a maximum of 833,914 Escrow Common Shares, and is equal to \$ 3.3 million based on the Original Issue Amount (the "Maximum Contingent Redemption Amount"). The fair value of the Preferred Escrow Shares was determined on the Acquisition Date and was comprised of the Maximum Contingent Redemption Amount and the fair value of the non-escrowed Preferred Shares ("Non-Preferred Escrow Shares").

The Series A Preferred Stock contained a mandatory redemption feature in the event the Preferred Shares, including future issuances of Series A Preferred Stock issued under dividend requirements, were not converted into shares of Common Stock prior to February 1, 2028. The Company concluded that both the Escrow Shares and the Non Escrow Shares did not meet the definition of mandatorily redeemable financial instruments as there was not a substantive conversion feature, and were therefore not classified as liabilities. As both the Escrow Shares and Non Escrow Shares represented financial instruments that were redeemable for cash, SEC guidance mandates that preferred securities which are redeemable upon the occurrence of an event that is not solely within the control of the issuer be classified outside of permanent equity as "temporary equity." Accordingly, the Company classified and reported the Series A Preferred Stock as temporary equity and in the Consolidated Balance Sheet as of as of March 31, 2023. On the Conversion Date, all shares of Series A Preferred Stock were converted into 5,362,926 shares of Common Stock, and the Company reclassified all of the Series A Preferred Stock to Common Stock as of June 30, 2023.

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Other

The amounts of year to date revenues and net loss for Arq for the period from the Acquisition Date to September 30, 2023 are as follows:

(in thousands)	Nine Months Ended September 30,	
	2023	
Revenues	\$ —	
Net loss	\$ (9,199)	

The following represents the pro forma effects of the Arq Acquisition as if it had occurred on January 1, 2022. The pro forma net loss for each of the two periods presented has been calculated after applying the Company's accounting policies in effect for those periods. In addition, pro forma net loss includes: (1) for the nine months ended September 30, 2022, an increase in Payroll and benefits for compensation expense of \$1.9 million payable to certain Arq employees, triggered by change in control provisions in employment agreements and employee severance agreements that has not been recognized in the historical financial statements, assuming such amounts will be paid in cash; (2) for the nine months ended September 30, 2023 and 2022, a decrease in depreciation and amortization of \$0.2 million and \$1.2 million, respectively, resulting from fair value adjustments to Property, plant, equipment; (3) for the nine months ended September 30, 2023 and 2022, an increase in amortization of \$0.1 million and \$0.3 million, respectively, resulting from fair value adjustments to intangible assets; (4) for the nine months ended September 30, 2023 and 2022, increases to Interest expense of \$0.2 million and \$1.4 million, respectively, for: (a) the issuance of the Term Loan (as defined below) including stated interest and the amortization of the Term Loan's discount and issuance costs and (b) amortization of debt discount related to a fair value adjustment to an assumed term loan of Arq; and (5) the removal of \$3.8 million of transaction costs incurred for the period from October 1, 2022 to September 30, 2023 but included as additional transaction costs for the nine months ended September 30, 2022, together with the income tax effects on (1) through (5). Since Arq had no revenues for the nine months ended September 30, 2023 or 2022, pro forma revenues are the same as the Company's reported revenues for those periods.

(in thousands)	Nine Months Ended September 30,	
	2023	2022
Revenues	\$ 71,079	\$ 79,578
Net loss	\$ (12,100)	\$ (53,752)

Note 3 - Marshall Mine

On March 27, 2023, (the "MM Closing Date"), the Company completed the sale of all of its membership interests in Marshall Mine, LLC to a third party (the "Buyer") in exchange for cash payment of \$2.2 million (the "MM Purchase Price") made by the Company to the Buyer and the assumption by the Buyer of certain liabilities of Marshall Mine, LLC. As of the MM Closing Date, Marshall Mine, LLC had outstanding liabilities of approximately \$4.9 million that were discharged upon payment of the MM Purchase Price by the Company, and the Company recognized a gain of approximately \$2.7 million in the Statement of Operations for the nine months ended September 30, 2023.

Note 4 - Revenues

Trade receivables represent an unconditional right to consideration in exchange for goods or services transferred to a customer. The Company invoices its customers in accordance with the terms of the contract. Credit terms are generally net 30 - 45 days from the date of invoice. The timing between the satisfaction of performance obligations and when payment is due from the customer is generally not significant.

Contract liabilities are comprised of deferred revenue, which represents an obligation to transfer goods or services to a customer for which the Company has received consideration from the customer and, if deliverable within one year or less, is included in "Other current liabilities" in the Condensed Consolidated Balance Sheets and, if deliverable outside of one year, is included in "Other long-term liabilities" in the Condensed Consolidated Balance Sheets.

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The following table shows the components of the Company's Receivables, net:

<i>(in thousands)</i>	As of	
	September 30, 2023	December 31, 2022
Trade receivables, net	\$ 14,138	\$ 13,789
Other receivables	87	75
Receivables, net	\$ 14,225	\$ 13,864

For the three and nine months ended September 30, 2023 and 2022, all material performance obligations related to revenues recognized were satisfied at a point in time. For the three and nine months ended September 30, 2023, approximately 7% and 8%, respectively, of Consumables revenues were generated in Canada, and all other revenues were generated in the U.S. For the three and nine months ended September 30, 2022, approximately 7% and 9% respectively, of Consumables revenues were generated in Canada, and all other revenues were generated in the U.S.

Note 5 - Inventories, net

The following table summarizes the Company's inventories recorded at the lower of average cost or net realizable value, as of September 30, 2023 and December 31, 2022:

<i>(in thousands)</i>	As of	
	September 30, 2023	December 31, 2022
Product inventory, net	\$ 8,659	\$ 9,479
Raw material inventory	9,890	8,349
Total inventories, net	\$ 18,549	\$ 17,828

Note 6 - Debt Obligations

<i>(in thousands)</i>	As of	
	September 30, 2023	December 31, 2022
Term Loan due February 2027, related party	\$ 10,000	\$ —
Arq Loan due January 2036	9,659	—
Finance lease obligations	3,727	4,581
	23,386	4,581
Unamortized debt discounts	(880)	—
Unamortized debt issuance costs	(1,336)	—
	21,170	4,581
Less: Current maturities	(1,991)	(1,131)
Total long-term debt obligations	\$ 19,179	\$ 3,450

Term Loan

As required under the Purchase Agreement, and on February 1, 2023 (the "Closing Date"), the Company, as borrower, certain of its subsidiaries, as guarantors, and CF Global ("CFG"), a related party, as administrative agent and lender (the "Lender"), entered into a term loan (the "Term Loan") in the amount of \$10.0 million, less original issue discount ("OID") of \$0.2 million, upon execution of a Term Loan and Security Agreement (the "CFG Loan Agreement"). The Company received net cash proceeds of \$8.5 million after deducting the OID and debt issuance costs of \$ 1.3 million.

The CFG Loan Agreement also required the issuance of a warrant (the "Warrant") to CFG to purchase 325,457 shares of Common Stock (the "Warrant Shares"), which represented 1% of the post-Arq Acquisition and PIPE Investment (as defined below) fully diluted share capital (as defined in the CFG Loan Agreement), at an exercise price of \$0.01 per share. The Warrant has a term of 7 years and contains a cashless exercise provision.

The Term Loan matures on February 1, 2027 and bears interest at a rate equal to either (a) Adjusted Term SOFR (subject to a 1.00% floor and a cap of 2.00%) plus a margin of 9.00% paid in cash and 5.00% paid in kind or (b) Base Rate plus a margin of 8.00% paid in cash and 5.00% paid in kind, which interest on the Term Loan in each case shall be payable (or capitalized, in the case of in kind interest) quarterly in arrears.

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The Company may prepay the Term Loan at any time subject to the following prepayment premium: (i) prior to the twelve month anniversary of the Closing Date, the Make-Whole Amount (as defined below), (ii) thereafter but prior to the thirty-six month anniversary of the Closing Date, 2.00% of the outstanding principal amount of the Term Loan being repaid or prepaid or (iii) thereafter until the maturity date, 1.00% of the outstanding principal amount of the Term Loan being repaid or prepaid. The "Make-Whole Amount," with respect to any repayment or prepayment, is (i) an amount equal to all required interest payable (except for currently accrued and unpaid interest) on the aggregate principal amount of the Term Loan subject to such prepayment or repayment from the date of such prepayment or repayment through but excluding the date that is the first anniversary of the Closing Date calculated using an interest rate equal to (x) Adjusted Term SOFR for an interest period of one month in effect on the third U.S. Government Securities Business Day prior to such prepayment or repayment plus (y) 14.00% per annum and assuming all interest was paid in cash, plus (ii) a prepayment premium of 2.00% on the aggregate principal amount of the Term Loan subject to such prepayment or repayment.

The Term Loan is secured by substantially all of the assets of the Company and its subsidiaries (including those acquired in the Acquisition, but excluding those pledged as collateral (the "Arq Loan Assets") under the Arq Loan, as defined and described below), subject to customary exceptions. The CFG Loan Agreement includes, among others, the following covenants: (1) beginning with the first fiscal quarter after March 31, 2023 and as of the end of each fiscal quarter thereafter, the Company must maintain a minimum unrestricted cash balance of \$5.0 million; (2) (x) as of December 31, 2023, for the fiscal year then ended, the Company must have a minimum annual revenue, on a consolidated basis, of \$70.0 million, (y) as of December 31, 2024, for the fiscal year then ended, the Company must have a minimum annual revenue, on a consolidated basis, of \$85.0 million and (z) for any fiscal year thereafter, the Company must have a minimum annual revenue, on a consolidated basis, of \$100.0 million; (3) (x) as of December 31, 2024, for the fiscal year then ended, the Company must have a minimum Consolidated EBITDA of \$3.0 million and (y) for any fiscal year thereafter, the Company must have a minimum Consolidated EBITDA of \$16.0 million; and (4) beginning after the fiscal quarter ending September 30, 2023, during an LTV Trigger Period, ADES must not exceed a loan to value ratio of 0.40:1.00 (based on the consolidated total assets of the Company and its subsidiaries, but excluding the Arq Loan Assets).

The Company allocated the cash proceeds of the Term Loan to both the Term Loan and the Warrant based on their relative fair values. The amount allocated to the Warrant was recorded as a debt discount and is amortized to interest expense over the term of the Term Loan. The standalone fair value of the Term Loan was based on a comparison of borrowings and associated credit ratings consistent with those of the Company. As the Warrant is exercisable for \$0.01 per share, the fair value is deemed to be equal to the fair value of the underlying shares, and accordingly, the fair value of the Warrant was determined as the number of shares issuable from the exercise of the Warrant (based on 1.0% of post-transaction fully diluted share capital, as defined in the Purchase Agreement) multiplied by the closing share price of the Company's common stock on the Acquisition Date.

Arq Loan

As consideration in the Arq Acquisition, the Company assumed a term loan (the "Arq Loan") held by certain Arq subsidiaries as set out in the Arq Loan (the "Arq Subsidiaries") with a financial institution (the "Bank") in the principal amount of \$10.0 million. The Company recorded the Arq Loan on the Acquisition Date at its estimated fair value of \$9.7 million, with the difference of \$0.3 million between the estimated fair value and the principal amount recorded as a debt discount and recognized as interest expense over the term of the Arq Loan.

The Arq Loan was originally entered into on January 27, 2021 and is comprised of two promissory notes (the "Notes"): (1) "Note A" in the principal amount of \$8.0 million, which is guaranteed by the U.S. Department of Agriculture; and (2) "Note B" in the principal amount of \$ 2.0 million. The Notes mature on January 27, 2036 and bear interest at 6.0% per annum through January 2026 and at the prime rate plus 2.75% thereafter. Beginning January 27, 2023 and for the balance of the term of the Arq Loan, the Arq Subsidiaries are required to make combined interest and principal payments monthly in the fixed amount of \$0.1 million. Interest is computed and payable on the outstanding principal as of the end of the prior month and the balance of the fixed monthly payment amount is applied to the outstanding principal. The Notes carry a prepayment penalty of 3.0% of the outstanding principal if paid prior to January 27, 2024, 2.0% of the outstanding principal if paid prior to January 27, 2025 and 1.0% of the outstanding principal if paid prior to January 27, 2026. Thereafter, the Arq Loan may be prepaid without penalty.

On June 2, 2023 (the "Amendment Date"), certain of the Arq Subsidiaries, which included Corbin Project LLC, Arq Projects Holding Company LLC, Arq St. Rose LLC, Arq Corbin LLC and Arq Corbin Land LLC (collectively, the "Borrowers") and the Bank entered into a loan modification agreement (the "Arq Loan Modification Agreement") to the Arq Loan, as amended by that certain letter agreement by and among the Bank and Borrowers dated January 21, 2022, and as otherwise amended, modified and/or extended by the parties from time to time (collectively, the "Arq Loan Agreement"). As consideration for the Bank entering into the Arq Loan Modification Agreement, the Borrowers agreed to pay a fee of \$50,000 plus additional fees incurred by the Bank and were required to deposit an additional \$0.7 million into a deposit account (the "Interest Reserve Account" as defined in the Arq Loan Agreement), where the Interest Reserve Account is held as collateral by the Bank. The

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Borrowers may withdraw funds from the Interest Reserve Account beginning one year from the Amendment Date, subject to restrictions as stated in the Arq Loan Modification Agreement.

The Arq Loan Modification Agreement clarified and modified certain terms under the Arq Loan Agreement. The principal clarifications and modifications are as follows:

- The Borrowers are not entitled to any further disbursements of proceeds under those promissory notes described in the Arq Loan Modification Agreement;
- The Bank agreed to waive certain financial delivery requirements for fiscal years 2021 and 2022;
- The Bank agreed to waive certain required financial covenants required as of December 31, 2022 and certain required financial covenants as of December 31, 2023;
- The Borrowers are required to establish their operating bank accounts with the Bank no later than September 30, 2023; and
- The Bank is authorized to amend and/or amend and restate its then-current security instruments to include additional collateral represented by the Borrowers' acquisition of any equipment or other fixed and/or operating assets in which the Bank does not then hold a lien or security interest.

The Arq Loan is secured by substantially all assets of the Borrowers and includes among others, the following covenants with respect to the Borrowers, which are tested annually (Capitalized terms are defined in the Arq Loan Agreement): (a) Total Indebtedness to Net Worth greater than 4 to 1; (b) Balance Sheet Equity greater than or equal to 20% of the book value of all assets of the Borrowers; (c) (i) net income plus interest, taxes, depreciation and amortization divided by (ii) interest expense plus current maturities on long-term debt greater than or equal to 1.25 to 1.

Note 7 - Leases

The Company's operating and finance lease right-of-use ("ROU") assets and liabilities as of September 30, 2023 and December 31, 2022 consisted of the following items (in thousands):

Leases	As of	
	September 30, 2023	December 31, 2022
Operating Leases		
Operating lease right-of-use assets, net of accumulated amortization ⁽¹⁾	\$ <u>10,673</u>	\$ <u>7,734</u>
Operating lease obligations, current	\$ <u>2,045</u>	\$ <u>2,724</u>
Long-term operating lease obligations	<u>8,797</u>	<u>5,133</u>
Total operating lease obligation	<u><u>10,842</u></u>	<u><u>7,857</u></u>
Finance Leases		
Finance lease right-of-use assets, net of accumulated amortization ⁽²⁾	\$ <u>1,904</u>	\$ <u>2,565</u>
Finance lease obligations, current	\$ <u>1,477</u>	\$ <u>1,131</u>
Long-term finance lease obligations	<u>2,250</u>	<u>3,450</u>
Total finance lease obligations	<u><u>3,727</u></u>	<u><u>4,581</u></u>

(1) Operating lease ROU assets are reported net of accumulated amortization of \$5.1 million and \$4.4 million as of September 30, 2023 and December 31, 2022, respectively.

(2) Finance lease ROU assets are reported net of accumulated amortization of \$2.5 million and \$2.0 million as of September 30, 2023 and December 31, 2022, respectively.

Operating leases

ROU assets under operating leases and operating lease liabilities are included in the "Other long-term assets" and "Other current liabilities" and "Other long-term liabilities" line items, respectively, in the Condensed Consolidated Balance Sheets as of September 30, 2023 and December 31, 2022.

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Lease expense for operating leases for the three and nine months ended September 30, 2023 was \$ 1.6 million and \$4.3 million, respectively, of which \$1.2 million and \$3.4 million, respectively, is included in the "Consumables - cost of revenue, exclusive of depreciation and amortization" line item, and \$0.4 million and \$0.9 million, respectively, is included in the "General and administrative" line item in the Condensed Consolidated Statements of Operations for those periods. Lease expense for operating leases for the three and nine months ended September 30, 2022 was \$1.2 million and \$3.2 million, respectively, of which \$1.1 million and \$2.9 million, respectively, is included in the "Consumables - cost of revenue, exclusive of depreciation and amortization" line item, and \$0.1 million and \$0.4 million, respectively, is included in the "General and administrative" line item in the Condensed Consolidated Statements of Operations for those periods.

Finance leases

ROU assets under finance leases are included in the "Property, plant and equipment" line item in the Condensed Consolidated Balance Sheets as of September 30, 2023 and December 31, 2022. Interest expense related to finance lease obligations and amortization of ROU assets under finance leases are included in the "Interest expense" and "Depreciation, amortization, depletion and accretion" line items, respectively, in the Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2023 and 2022.

Lease financial information as of and for the three and nine months ended September 30, 2023 and 2022 is provided in the following table:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Finance lease cost:				
Amortization of right-of-use assets	\$ 215	\$ 236	\$ 661	\$ 607
Interest on lease liabilities	59	76	190	240
Operating lease cost	1,000	805	3,017	2,389
Short-term lease cost	481	373	1,132	832
Variable lease cost ⁽¹⁾	81	5	145	12
Total lease cost	\$ 1,836	\$ 1,495	\$ 5,145	\$ 4,080
Other Information:				
Cash paid for amounts included in the measurement of lease liabilities:				
Operating cash flows for finance leases	\$ 190	\$ 240	\$ 190	\$ 240
Operating cash flows for operating leases	\$ 2,087	\$ 2,118	\$ 2,087	\$ 2,118
Financing cash flows for finance leases	\$ 855	\$ 913	\$ 855	\$ 913
Right-of-use assets obtained in exchange for new finance lease liabilities	\$ —	\$ 1,641	\$ —	\$ 1,641
Right-of-use assets obtained in exchange for new operating lease liabilities	\$ 1,947	\$ 3,563	\$ 1,947	\$ 3,563
Weighted-average remaining lease term - finance leases	2.1 years	2.9 years	2.1 years	2.9 years
Weighted-average remaining lease term - operating leases	7.8 years	4.2 years	7.8 years	4.2 years
Weighted-average discount rate - finance leases	5.9 %	5.9 %	5.9 %	5.9 %
Weighted-average discount rate - operating leases	12.7 %	6.1 %	12.7 %	6.1 %

(1) Primarily includes common area maintenance, property taxes and insurance payable to lessors.

Note 8 - Commitments and Contingencies

Marken Separation Agreement

Pursuant to Mr. Marken's termination as CEO of the Company effective July 17, 2023, the Company and Mr. Marken executed a separation agreement under which Mr. Marken will receive the following payments and benefits: (i) the severance payments and benefits set forth in the terms of his employment agreement upon a termination without "cause," (ii) accelerated vesting of 49,715 shares of restricted stock, (iii) continued eligibility for possible vesting of a pro rata target number of 25,941 performance share units ("PSUs") granted in 2021, subject to achievement of applicable performance measures, (iv) continued eligibility for possible vesting of a pro rata target number of 15,988 PSUs granted in 2022, subject to achievement of applicable performance measures, and (v) continued eligibility for possible vesting of a pro rata target number of 19,834 PSUs granted in 2023, subject to achievement of applicable performance measures. As of September 30, 2023, the Company recorded a liability and corresponding charge in the amount of \$0.8 million related to (i) and (ii) above.

Retention Agreements

As of December 31, 2022, the Company had an outstanding liability of \$ 1.4 million (the "Retention Liability"), which was included in the "Other current liabilities" line item in the Condensed Consolidated Balance Sheet, related to retention agreements (the "Retention Agreements") executed between the Company and its executive officers and certain other key employees in May 2021 and amended in May 2022 in order to maintain the Company's business operations while it pursued and executed on its strategic initiatives. The Retention Agreements were approved by the Compensation Committee of the Board of Directors and the Board of Directors (the "Board") in May 2021 and May 2022. In August 2022, the Company paid \$1.0 million pursuant to the payment terms of the Retention Agreements and the Retention Liability was paid in full in January 2023.

Surety Bonds and Restricted Cash

As the owner of the Five Forks Mine, the Company is required to post a surety bond with a regulatory commission related to performance requirements associated with the Five Forks Mine. As of September 30, 2023 and December 31, 2022, the amount of this surety bond was \$7.5 million.

The Company leases land adjacent to the Corbin Facility and is required to post surety bonds with a regulatory commission for reclamation. As of September 30, 2023, the amount of these surety bonds was \$3.0 million.

The Company holds permits for an abandoned mine in West Virginia ("Mine 4") and is required to post a surety bond with a regulatory commission for reclamation. As of September 30, 2023, the amount of this surety bond was \$0.7 million.

As the owner of the Marshall Mine, the Company was required to post a surety bond with a regulatory commission. As of December 31, 2022, the Company posted a \$16.6 million surety bond that was released upon all of the Conditions for closing the MM Transaction being satisfied, which occurred on March 27, 2023.

As of September 30, 2023 and December 31, 2022, the Company posted cash collateral of \$ 8.5 million and \$10.0 million, respectively, as required by the Company's surety bond providers, which is reported as long-term restricted cash in the Condensed Consolidated Balance Sheets. As of September 30, 2023, the Company holds a deposit of \$0.4 million with a third party for collateral as required under a bonding arrangement for Mine 4. This deposit is included in "Other long-term assets, net" in the Condensed Consolidated Balance Sheet as of September 30, 2023.

The Company has a customer supply agreement that requires the Company to post a performance bond in an amount equal to the annual contract value of \$3.7 million. As of September 30, 2023, the remaining commitment under this customer contract, which expires on December 31, 2023, was approximately \$0.4 million.

Tinuum Group

In addition to those obligations described in Note 10, the Company has certain limited obligations contingent upon future events in connection with the activities of Tinuum Group. The Company, NexGen Refined Coal, LLC ("NexGen") and two entities affiliated with NexGen have provided an affiliate of the Goldman Sachs Group, Inc. with limited guaranties (the "Tinuum Group Party Guaranties") related to certain losses it may suffer as a result of inaccuracies or breach of representations and covenants committed by Tinuum Group. The Company also is a party to a contribution agreement with NexGen under which any party called upon to pay on a Tinuum Group Party Guaranty is entitled to receive contributions from the other party equal to 50% of the amount paid. The Company has not recorded a liability or expense provision related to this contingent obligation as it believes that it is not probable that a loss will occur with respect to the Tinuum Group Party Guaranties.

As previously disclosed, effective December 31, 2021, the Section 45 tax credit period expired and, as a result, both Tinuum Group and Tinuum Services (discussed below) ceased their operations.

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Legal Proceedings

The Company is from time to time subject to various pending or threatened legal actions and proceedings, including those that arise in the ordinary course of its business. Such matters are subject to many uncertainties and outcomes, the financial impacts of which are not predictable with assurance and that may not be known for extended periods of time. The Company records a liability in its consolidated financial statements for costs related to claims, settlements and judgments where management has assessed that a loss is probable and an amount can be reasonably estimated. There were no significant legal proceedings as of September 30, 2023.

Note 9 - Supplemental Financial Information

Supplemental Balance Sheet Information

The following table summarizes the components of Other long-term assets, net as presented in the Condensed Consolidated Balance Sheets:

<i>(in thousands)</i>	As of	
	September 30, 2023	December 31, 2022
Other long-term assets, net:		
Right of use assets, operating leases, net	\$ 10,673	\$ 7,734
Intangible assets, net	8,053	847
Spare parts, net	8,523	6,789
Upfront Customer Consideration	6,094	6,475
Mine development costs, net	7,063	5,478
Mine reclamation asset, net	1,566	1,641
Other	2,657	1,683
Total other long-term assets, net	\$ 44,629	\$ 30,647

Spare parts include critical spares required to support plant operations. Parts and supply costs are determined using the lower of cost or estimated replacement cost. Parts are recorded as maintenance expenses in the period in which they are consumed or are capitalized if applicable.

Mine development costs include acquisition costs, the cost of other development work and mitigation costs related to the Five Forks Mine and are depleted over the estimated life of the related mine reserves. The Company performs an evaluation of the recoverability of the carrying value of mine development costs to determine if facts and circumstances indicate that their carrying value may be impaired and if any adjustment is warranted. There were no indicators of impairment as of September 30, 2023.

Mine reclamation asset, net represents an asset retirement obligation ("ARO") asset related to the Five Forks Mine and is depreciated over its estimated life.

As of September 30, 2023 and December 31, 2022, Other includes the Highview Investment in the amount of \$ 0.6 million and \$0.6 million, respectively, that is carried at cost, less impairment, plus or minus observable changes in price for identical or similar investments of the same issuer. Fair value measurements, if any, represent Level 2 measurements. The Highview Investment is evaluated for indicators of impairment such as an event or change in circumstances that may have a significant adverse effect on the fair value of the investment. There were no changes to the carrying value of the Highview Investment for the three and nine months ended September 30, 2023 as there were no indicators of impairment or observable price changes for identical or similar investments.

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The following table details the components of Other current liabilities and Other long-term liabilities as presented in the Condensed Consolidated Balance Sheets:

(in thousands)	As of	
	September 30, 2023	December 31, 2022
Other current liabilities:		
Current portion of operating lease obligations	\$ 2,045	\$ 2,724
Income and other taxes payable	1,126	1,039
Current portion of mine reclamation liability	176	548
Other ⁽¹⁾	2,714	2,334
Total other current liabilities	\$ 6,061	\$ 6,645
Other long-term liabilities:		
Operating lease obligations, long-term	\$ 8,797	\$ 5,133
Mine reclamation liabilities	5,444	7,985
Other	866	733
Total other long-term liabilities	\$ 15,107	\$ 13,851

(1) Included in Other current liabilities is \$1.7 million related to the Repayment Agreement as defined in Note 10.

As of September 30, 2023 and December 31, 2022, the Mine reclamation liability related to the Five Forks Mine is included in Other long-term liabilities. As of December 31, 2022, the Mine reclamation liability related to Marshall Mine was included in Other current liabilities and Other long-term liabilities.

As part of the Arq Acquisition, the Company assumed asset retirement obligations related to two sites; a coal waste site adjacent to the Corbin Facility (the "Corbin ARO") and Mine 4 located in West Virginia (the "Mine 4 ARO"). The Company recorded these AROs at their estimated fair values and periodically adjusts them to reflect changes in the estimated present value resulting from the passage of time and revisions to the estimates of either the timing or amount of the reclamation costs. As of September 30, 2023, the Corbin ARO is included in Other long-term liabilities. As of September 30, 2023, the current portion of the Mine 4 ARO is included in Other current liabilities with the long-term portion included in Other long-term liabilities.

The Mine reclamation liabilities represent AROs and changes for the nine months ended September 30, 2023 and year ended December 31, 2022 were as follows:

(in thousands)	As of	
	September 30, 2023	December 31, 2022
Asset retirement obligations, beginning of period	\$ 8,533	\$ 9,959
Asset retirement obligations assumed ⁽¹⁾	1,500	—
Accretion	441	611
Liabilities settled ⁽²⁾	(4,854)	(2,071)
Changes due to scope and timing of reclamation	—	34
Asset retirement obligations, end of period	5,620	8,533
Less current portion	176	548
Asset retirement obligations, long-term	\$ 5,444	\$ 7,985

(1) Represents the Corbin ARO and Mine 4 ARO in the amounts of \$0.5 million and \$1.0 million, respectively.

(2) Represents the removal of the Marshall Mine ARO as a result of the sale of Marshall Mine, LLC, as further discussed in Note 3.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
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Note 10 - Equity Method Investments

Tinuum Group, LLC

As of September 30, 2023 and December 31, 2022, the Company's ownership interest in Tinuum Group was 42.5%. For the three and nine months ended September 30, 2023 the Company recognized earnings from Tinuum Group of \$0.2 million and \$1.1 million, respectively, which was comprised solely of cash distributions received during these periods. For the three and nine months ended September 30, 2022, the Company recognized earnings from Tinuum Group of zero and \$3.1 million, respectively, which was comprised solely of cash distributions received during these periods.

In December 2022, the Company, certain of the other owners of Tinuum Group (collectively, the "Tinuum Group Owners") and Tinuum Group executed the Distribution and Repayment Agreement (the "Repayment Agreement"). Under the terms of the Repayment Agreement, the Tinuum Group Owners receive cash distributions (the "Distributions") equal to their percentage ownership and also are contractually liable for certain contingent liabilities of Tinuum Group (the "Tinuum Group Obligation") in amounts equal to their percentage ownership. In December 2022, the Company received its percentage share of the Distributions in the amount of \$2.0 million and became contractually liable for \$1.7 million of the Tinuum Group Obligation. As of September 30, 2023 and December 31, 2022, the Company's portion of the Tinuum Group Obligation is \$1.7 million and \$1.7 million, respectively, and is included in the "Other current liabilities" line item in the Condensed Consolidated Balance Sheets. In the event that the Tinuum Group Obligation is discharged in its entirety or settled for an amount that is less than the total Tinuum Group Obligation, the Company will recognize future equity earnings for the difference in its portion of the Tinuum Group Obligation and its pro rata share of the actual payment made by Tinuum Group, if any, for the Tinuum Group Obligation.

In December 2022, the Company and Tinuum Group entered into an agreement (the "Tinuum Group Royalty Agreement") whereby the Company pays Tinuum Group a royalty (the "Tinuum Group Royalty") on certain of the Company's sales of its M-Prove™ products after the expiration of the Section 45 Tax Credit Program (beginning January 1, 2022) to certain of the former refined coal facilities owned by Tinuum Group and operated by Tinuum Services (the "M-45 Facilities"). The Tinuum Group Royalty is calculated based on "Net Profit" (as defined in the Tinuum Royalty Agreement) on the Company's sales of M-Prove™ product to certain of the M-45 Facilities. The Tinuum Group Royalty Agreement is for an initial term of five years with automatic renewals of five years unless the Company and Tinuum Group agree to terminate it.

For the three and nine months ended September 30, 2023, the Company recognized \$ 0.2 million and \$0.6 million, respectively, of Tinuum Group Royalties, which are included in the "Consumables cost of revenues, excluding depreciation and amortization" line item in the Consolidated Statement of Operations.

Tinuum Services, LLC

As of September 30, 2023 and December 31, 2022, the Company had a 50% voting and economic interest in Tinuum Services. For the three and nine months ended September 30, 2023, the Company recognized income from Tinuum Services of \$0.2 million and \$0.5 million, respectively. For the three and nine months ended September 30, 2022, the Company recognized income from Tinuum Services of zero and \$0.1 million, respectively.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
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Cash Distributions

The following table details the components of the cash distributions from the Company's respective equity method investments included as a component of cash flows from operating activities and investing activities in the Condensed Consolidated Statements of Cash Flows. Distributions from equity method investees are reported in the Condensed Consolidated Statements of Cash Flows as "Distributions from equity method investees, return on investment" as a component of cash flows from operations until such time as the carrying value in an equity method investee company is reduced to zero. Thereafter, such distributions are reported as "Distributions from equity method investees in excess of cumulative earnings" as a component of cash flows from investing activities.

(in thousands)	Nine Months Ended September 30,	
	2023	2022
Distributions from equity method investees, return on investment		
Tinuum Services	\$ —	\$ 2,297
Tinuum Group	—	—
	\$ —	\$ 2,297
Distributions from equity method investees in excess of investment basis		
Tinuum Group	\$ 1,062	\$ 3,137
Tinuum Services	450	179
	\$ 1,512	\$ 3,316

Note 11 - Stockholders' Equity

Equity Transactions

On February 1, 2023, and pursuant to the Arq Acquisition, the Company entered into Subscription Agreements with certain persons (the "Subscribers"), which included existing shareholders of Arq Ltd., three of which were appointed to the Company's Board of Directors (the "Board"), pursuant to which the Subscribers subscribed for and purchased 3,842,315 shares of Common Stock for an aggregate purchase price of \$ 15.4 million and at a price per share of \$4.00 (such transaction, the "PIPE Investment").

On February 1, 2023, and as consideration for the Arq Acquisition, the Company issued 3,814,864 shares of its Common Stock and 5,294,462 shares of Series A Preferred Stock.

On March 31, 2023, and pursuant to the Certificate of Designations, the Company declared a dividend of 68,464 shares of Series A Preferred Stock with respect to accrued dividends on the Series A Preferred Stock for the first quarter of 2023 (the "PIK Dividend"). The PIK Dividend was recorded at the estimated fair value of \$0.2 million as of March 31, 2023 and was paid on April 21, 2023.

On June 13, 2023, pursuant to stockholder approval, all shares of Series A Preferred Stock were converted into 5,362,926 shares of Common Stock.

On July 14, 2023, the Board appointed Mr. Robert Rasmus to the positions of President and Chief Executive Officer effective July 17, 2023 succeeding Mr. Greg Marken. Also on this date, the Board increased the size of the Board from seven to eight directors and appointed Mr. Rasmus to fill the vacancy as a member of the Board effective immediately.

On July 17, 2023, the Company entered into a Subscription Agreement (the "Subscription Agreement") with Mr. Rasmus and entities controlled by Mr. Rasmus, in connection with his appointment as the Company's President and Chief Executive Officer. Pursuant to the Subscription Agreement, Mr. Rasmus subscribed for and agreed to purchase 950,000 shares of Common Stock from the Company for an aggregate purchase price of \$1.8 million (at a price per share of approximately \$1.90). In September 2023, the Company received cash of \$ 1.0 million and issued 527,779 shares of Common Stock to Mr. Rasmus pursuant to the Subscription Agreement. The Company expects to receive the remaining cash of \$0.8 million due under the Subscription Agreement during the fourth quarter of 2023 and, when received, will issue Mr. Rasmus 422,221 shares of Common Stock.

Term Loan

As consideration for the Term Loan, the Company issued 325,857 Warrant Shares, which were deemed to be equity securities. The Warrant Shares were recorded at their estimated fair value of \$0.8 million to Additional paid in capital with a corresponding amount recorded as a debt discount on the Term Loan.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Stock Repurchase Program

As of September 30, 2023, the Company had \$7.0 million remaining under a stock repurchase program, which will remain in effect until all amounts are utilized or is otherwise modified by the Board.

Tax Asset Protection Plan

U.S. federal income tax rules, and Section 382 of the Internal Revenue Code in particular, could substantially limit the use of net operating losses and tax credits if the Company experiences an "ownership change" (as defined in the Internal Revenue Code). In general, an ownership change occurs if there is a cumulative change in the ownership of the Company by "5 percent stockholders" that exceeds 50 percentage points over a rolling three-year period.

An entity that experiences an ownership change generally will be subject to an annual limitation on its pre-ownership change tax loss and credit carryforwards equal to the equity value of the entity immediately before the ownership change, multiplied by the long-term, tax-exempt rate posted monthly by the Internal Revenue Service (subject to certain adjustments). The annual limitation would be increased each year to the extent that there is an unused limitation in a prior year.

On May 5, 2017, the Board approved the declaration of a dividend of rights to purchase Series B Junior Participating Preferred Stock for each outstanding share of common stock as part of a tax asset protection plan (the "TAPP"), which is designed to protect the Company's ability to utilize its net operating losses and tax credits. The TAPP is intended to act as a deterrent to any person acquiring beneficial ownership of 4.99% or more of the Company's outstanding common stock.

On April 11, 2023, the Board approved the Sixth Amendment to the TAPP (the "Sixth Amendment"), which amends the TAPP, as previously amended by the First, Second, Third, Fourth and Fifth Amendments that were approved the Board on April 6, 2018, April 5, 2019, April 9, 2020, April 9, 2021 and March 15, 2022, respectively. The Sixth Amendment amends the definition of "Final Expiration Date" under the TAPP to extend the duration of the TAPP and makes associated changes in connection therewith. Pursuant to the Sixth Amendment, the Final Expiration Date shall be the close of business on the earlier of (i) December 31, 2024 or (ii) December 31, 2023 if stockholder approval of the Sixth Amendment has not been obtained prior to such date. At the Company's 2023 Annual Meeting of Stockholders, the Company's stockholders approved the Sixth Amendment, thus the Final Expiration Date will be the close of business on December 31, 2024.

Note 12 - Stock-Based Compensation

The Company grants equity-based awards to employees, non-employee directors and consultants that may include, but are not limited to, RSAs, PSUs, restricted stock units and stock options. Stock-based compensation expense related to manufacturing employees and administrative employees is included within the "Cost of revenue" and "Payroll and benefits" line items, respectively, in the Condensed Consolidated Statements of Operations. Stock-based compensation expense related to non-employee directors and consultants is included within the "General and administrative" line item in the Condensed Consolidated Statements of Operations.

Total stock-based compensation expense for the three and nine months ended September 30, 2023 and 2022 was as follows:

<i>(in thousands)</i>	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
RSA expense	\$ 501	\$ 420	\$ 1,405	\$ 1,240
PSU expense	151	87	355	215
Stock option expense	50	—	50	—
Total stock-based compensation expense	\$ 702	\$ 507	\$ 1,810	\$ 1,455

Advanced Emissions Solutions, Inc. and Subsidiaries
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(Unaudited)

The amount of unrecognized compensation cost as of September 30, 2023, and the expected weighted-average period over which the cost will be recognized is as follows:

(in thousands, except years)	As of September 30, 2023	
	Unrecognized Compensation Cost	Expected Weighted-Average Period of Recognition (in years)
RSA expense	\$ 1,723	1.86
PSU expense	502	2.01
Stock option expense	679	2.79
Total unrecognized stock-based compensation expense	\$ 2,904	2.10

Restricted Stock Awards

RSAs are typically granted with vesting terms of three years. The fair value of RSAs is determined based on the closing price of the Company's common stock on the authorization date of the grant multiplied by the number of shares subject to the stock award. Compensation expense for RSAs is generally recognized on a straight-line basis over the entire vesting period.

A summary of RSA activity under the Company's various stock compensation plans for the nine months ended September 30, 2023 is presented below:

	Restricted Stock	Weighted-Average Grant Date Fair Value	
		\$ 652,962	\$ 5.58
Non-vested at January 1, 2023			
Granted		773,327	1.91
Vested		(391,893)	4.89
Forfeited		(201,271)	3.29
Non-vested at September 30, 2023		833,125	3.04

Performance Share Units

Compensation expense for PSUs is recognized on a straight-line basis over the applicable service period, which is generally three years, based on the estimated fair value at the date of grant using a Monte Carlo simulation model. A summary of PSU activity for the nine months ended September 30, 2023 is presented below:

	Units	Weighted-Average Grant Date Fair Value	Weighted-Average	
			Aggregate Intrinsic Value (in thousands)	Remaining Contractual Term (in years)
PSUs outstanding, January 1, 2023	148,591	\$ 7.85		
Granted	682,709	1.22		
Vested / Settled ⁽¹⁾	—	—		
Forfeited / Canceled	(162,382)	4.10		
PSUs outstanding, September 30, 2023	668,918	\$ 1.99	\$ 1,191	2.01

(1) The number of units shown in the table above are based on target performance. The final number of shares of common stock issued may vary depending on the achievement of market conditions established within the awards, which could result in the actual number of shares issued ranging from zero to a maximum of two times the number of units shown in the above table. For the three and nine months ended September 30, 2023, no shares of common stock were issued upon vesting of PSUs.

Advanced Emissions Solutions, Inc. and Subsidiaries
Notes to Condensed Consolidated Financial Statements
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Stock Options

Stock options vest over three years and have a contractual limit of ten years from the date of grant to exercise. The fair value of stock options granted is determined on the date of grant using the Black-Scholes option pricing model, and the related expense is recognized on a straight-line basis over the entire vesting period. The determination of the grant date fair value of stock options issued is affected by a number of variables, including the fair value of the Company's common stock, the expected common stock price volatility over the expected term of the stock option, the expected term of the stock option, risk-free interest rates, and the expected dividend yield of the Company's common stock.

Risk-free interest rate - The risk-free interest rate for stock options granted during the period was determined by using a zero-coupon U.S. Treasury rate for the periods that coincided with the expected term of the options.

Dividend yield - An expected dividend yield of zero was included in the calculations, as the Company does not currently pay nor does it anticipate paying dividends on its common stock as of the grant date of the stock options.

Expected volatility - To calculate expected volatility, the historical volatility of the Company's common stock was used.

Expected term - The Company's expected term of stock options was calculated using a simplified method whereby the midpoint between the vesting date and the end of the contractual term is utilized to compute the expected term, as the Company does not have sufficient historical data for options with similar vesting and contractual terms.

The following table indicates the weighted average assumptions that were used related to the awards granted in the three months ended September 30, 2023:

	Three Months Ended September 30, 2023
Stock options granted:	1,000,000
Risk-free interest rate	4 %
Dividend yield	— %
Volatility	62 %
Expected term (in years)	6

A summary of stock option activity for the nine months ended September 30, 2023 is presented below:

	Number of Options			Weighted-Average	
	Outstanding and Exercisable	Weighted-Average Exercise Price	Aggregate Intrinsic Value		Remaining Contractual Term (in years)
Options outstanding, January 1, 2023	—	\$	—		
Options granted	1,000,000	3.00			
Options exercised	—	—			
Options expired / forfeited	—	—			
Options outstanding, September 30, 2023	<u>1,000,000</u>	<u>\$ 3.00</u>	<u>\$ —</u>		9.79
Options vested and exercisable, September 30, 2023	—	\$ —	\$ —		0.00

Note 13 - Income Taxes

For the three and nine months ended September 30, 2023 and 2022, the Company's income tax expense and effective tax rates were:

(in thousands, except for rate)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Income tax benefit	\$ —	\$ —	\$ (33)	\$ —
Effective tax rate	— %	— %	— %	— %

Advanced Emissions Solutions, Inc. and Subsidiaries
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The Company incurred pretax loss for the nine months ended September 30, 2023 and expects to incur pretax loss for the year ending December 31, 2023. As a result, the effective rate for the three and nine months ended September 30, 2023 was zero as the resultant tax benefit was offset by a valuation allowance recorded as of September 30, 2023.

The Company assesses a valuation allowance recorded against deferred tax assets at each reporting date. The determination of whether a valuation allowance for deferred tax assets is appropriate requires the evaluation of positive and negative evidence that can be objectively verified. Consideration must be given to all sources of taxable income available to realize deferred tax assets, including, as applicable, the future reversal of existing temporary differences, future taxable income forecasts exclusive of the reversal of temporary differences and carryforwards, taxable income in carryback years and tax planning strategies. In estimating income taxes, the Company assesses the relative merits and risks of the appropriate income tax treatment of transactions taking into account statutory, judicial and regulatory guidance.

Note 14 - Subsequent Events

Unless disclosed elsewhere in the notes to the Condensed Consolidated Financial Statements, there were no significant matters that occurred subsequent to September 30, 2023.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of our operations should be read together with the unaudited Condensed Consolidated Financial Statements and notes of Advanced Emissions Solutions, Inc. ("ADES" or the "Company") included elsewhere in Item 1 of Part I ("Item 1") of this Quarterly Report and with the audited consolidated financial statements and the related notes of ADES included in the 2022 Form 10-K.

The results of operations discussed in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" are those of ADES and its consolidated subsidiaries, collectively, the "Company," "we," "our" or "us."

Overview

We are an environmental technology company and sell consumable products that utilize activated carbon ("AC") and chemical-based technologies to a broad range of customers, including coal-fired utilities, industrials, water treatment plants, and other diverse markets served by one of our major customers. Our primary products are comprised of AC, which is produced from a variety of carbonaceous raw materials. Our AC products include both powdered activated carbon, Colloidal Activated Carbon Product and granular activated carbon. Our proprietary technologies and associated product offerings provide purification solutions to enable our customers to reduce certain contaminants and pollutants to meet the challenges of existing and potential future regulations. Additionally, we own an associated lignite mine that supplies the primary raw material for the manufacturing of our current products.

Acquisition

On February 1, 2023, we completed the Arq Acquisition and as Purchase Consideration, issued 3,814,864 shares of Common Stock and 5,294,462 shares of Series A Convertible Preferred Stock. The Purchase Consideration was valued at \$31.2 million.

On June 13, 2023, and pursuant to the Purchase Agreement, the Company's stockholders approved the conversion of all of the outstanding shares of Series A Preferred Stock and the corresponding issuance of 5,362,926 shares of Common Stock.

CFG Loan Agreement

On February 1, 2023, we and CFG entered into the Term Loan in the amount of \$10.0 million, less original issue discount of \$0.2 million. The Term Loan matures on February 1, 2027 and bears interest at a rate equal to either (a) Adjusted Term SOFR (subject to a 1.00% floor and a cap of 2.00%) plus a margin of 9.00% paid in cash and 5.00% paid in kind or (b) Base Rate plus a margin of 8.00% paid in cash and 5.00% paid in kind, which interest on the Term Loan in each case is payable (or capitalized, in the case of in kind interest) quarterly in arrears. The Term Loan is secured by substantially all of the assets of ADES and its subsidiaries (including those acquired in the Acquisition, but excluding those pledged as collateral under the Arq Loan, as defined and described in Note 6 "Debt Obligations" to the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report), subject to customary exceptions. We incurred issuance costs of \$1.3 million associated with the CFG Loan Agreement.

Pursuant to the CFG Loan Agreement, we issued the Warrant to CFG to purchase 325,457 shares of Common Stock, which represented 1% of the post-Arq Acquisition and PIPE Investment fully diluted share capital (as defined in the CFG Loan Agreement), at an exercise price of \$0.01 per share. The Warrant has a term of 7 years and contains a cashless exercise provision.

Equity Financings

On February 1, 2023, we and the Subscribers, which included existing shareholders of Arq Ltd., entered into the PIPE Investment for the purchase of 3,842,315 shares of Common Stock for an aggregate purchase price of \$15.4 million and at a price per share of \$4.00.

On July 17, 2023, we entered into the Subscription Agreement with Mr. Rasmus and entities controlled by Mr. Rasmus, in connection with his appointment as our President and Chief Executive Officer. Pursuant to the Subscription Agreement, Mr. Rasmus subscribed for and agreed to purchase 950,000 shares of Common Stock from us for an aggregate purchase price of \$1.8 million (at a price per share of approximately \$1.90). In September 2023, the Company received cash of \$1.0 million and issued 527,779 shares of Common Stock to Mr. Rasmus pursuant to the Subscription Agreement. The Company expects to receive the remaining cash of \$0.8 million due under the Subscription Agreement during the fourth quarter of 2023 and, when received, will issue Mr. Rasmus 422,221 shares of Common Stock.

Drivers of Demand and Key Factors Affecting Profitability

Drivers of demand and key factors affecting our profitability are sales of our consumables-based solutions for coal-fired power generation, industrials, municipal water customers and other diverse markets served by one of our major customers. Our operating results are influenced by: (1) changes in our manufacturing production and sales volumes; (2) changes in average selling price and product mix; (3) changes in coal-fired dispatch and electricity power generation sources and (4) changes in demand for contaminant removal within water treatment facilities and contaminated soil and groundwater sites.

For the three and nine months ended September 30, 2023, we experienced a decrease in demand for our product from certain coal-fired dispatch and electricity power generation customers. This was primarily due to lower than anticipated natural gas prices, resulting in several large utility customers opting to use natural gas versus coal as a primary source for power generation, and mild temperatures during the spring and early summer season, resulting in lower demand for power generation compared to 2022. We expect that natural gas prices will remain relatively consistent through 2023, which, we expect, will negatively impact sales of our products even with higher than average summer temperatures.

Marshall Mine

On March 27, 2023, we closed the sale of Marshall Mine, LLC and we remitted a cash payment to the Buyer in the amount of \$2.2 million in connection with the sale. As of March 27, 2023, Marshall Mine, LLC had outstanding liabilities of approximately \$4.9 million that were discharged upon the closing, and as a result, we recognized a gain of approximately \$2.7 million for the nine months ended September 30, 2023.

Results of Operations

For the three and nine months ended September 30, 2023, we recognized net loss of \$2.2 million and \$15.5 million, compared to net loss of \$2.4 million and \$5.8 million for the three and nine months ended September 30, 2022. The most significant factors impacting results for the comparable prior year periods were higher expenses related to the Arq Acquisition and lower revenues as a result of a decrease in demand for our AC and chemical products with power generation customers, primarily due to continued low prices of alternative energy sources for power generation.

The following sections provide additional information regarding these comparable periods. For comparability purposes, the following tables set forth our results of operations for the periods presented in the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report. The current year period to prior year period comparisons of financial results may not be indicative of financial results to be achieved in future periods.

Comparison of the Three Months Ended September 30, 2023 and 2022

Total Revenue and Cost of Revenue

A summary of the components of our revenues and cost of revenue for the three months ended September 30, 2023 and 2022 is as follows:

(in thousands, except percentages)	Three Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Revenues:				
Consumables	\$ 29,829	\$ 28,437	\$ 1,392	5 %
Total revenues	\$ 29,829	\$ 28,437	\$ 1,392	5 %
Operating expenses:				
Consumables cost of revenue, exclusive of depreciation and amortization	\$ 20,707	\$ 21,575	\$ (868)	(4)%

Consumables and consumables cost of revenue

For the three months ended September 30, 2023, consumables revenues increased from the comparable quarter in 2022 primarily driven by overall higher pricing and favorable product mix of approximately \$4.3 million and \$1.0 million, respectively. Offsetting these increases to Consumables revenues was approximately \$3.9 million attributable to lower volumes sold. Product volumes were lower among power generation customers primarily due to low natural gas prices compared to the same quarter in 2022, which contributed to decreased utilization of coal-fired generation and decreased demand for our products. The average natural gas spot prices (\$MMBtu) for the three months ended September 30, 2023 and 2022 were \$2.59 and \$7.99, respectively.

Consumables gross margin, exclusive of depreciation and amortization, increased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022. Driving the increase in gross margin was a decrease in the price of our feedstock and additives, primarily as a result of decreased production volumes for the three months ended September 30, 2023 from the corresponding quarter in 2022. Offsetting the overall increase in gross margin for the three months ended September 30, 2023 from the corresponding quarter in 2022 were higher fixed costs as a percentage of total consumables cost of revenue primarily due to lower production volumes for the three months ended September 30, 2023 from the corresponding quarter in 2022. Further reducing gross margin for the three months ended September 30, 2023 was severance expense of \$0.3 million related to the termination of an executive.

We expect that consumables revenues and gross margin will continue to be positively impacted by our product price increases and our efforts to move our product mix to higher margin products. We anticipate that the product price increases will help offset decreases in volumes due to prices of alternative energy sources impacting the demand for our AC and chemical products related to power generation. However, there is risk to our gross margin outlook driven by inflationary pressures that may increase our overall operating costs for our manufacturing operations.

Consumables revenues continues to be affected by electricity demand driven by seasonal weather and related power generation needs, as well as competitor prices related to alternative power generation sources such as natural gas and renewables.

Other Operating Expenses

A summary of the components of our operating expenses for the three months ended September 30, 2023 and 2022, exclusive of cost of revenue items (presented above), is as follows:

<i>(in thousands, except percentages)</i>	Three Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Operating expenses:				
Payroll and benefits	\$ 4,228	\$ 2,313	\$ 1,915	83 %
Legal and professional fees	1,654	3,668	(2,014)	(55)%
General and administrative	3,054	1,833	1,221	67 %
Depreciation, amortization, depletion and accretion	2,711	1,671	1,040	62 %
	\$ 11,647	\$ 9,485	\$ 2,162	23 %

Payroll and benefits

Payroll and benefits, which represent costs related to selling, general and administrative personnel, increased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022 primarily due to the addition of Arq employees from the date of the Arq Acquisition, which represented \$1.0 million of the increase, and an increase of \$0.2 million related to non-Arq employees. Further, for the three months ended September 30, 2023, we incurred severance related costs of \$1.0 million associated with the termination of an executive officer. Offsetting these increases was a reduction in retention bonuses of \$0.3 million, which were paid in full in January 2023.

Legal and professional fees

Legal and professional fees decreased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022 primarily from a decrease in legal and consulting costs incurred related to the Arq Acquisition.

General and administrative

General and administrative expenses increased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022 by approximately \$0.8 million quarter over quarter, mostly related to increases in travel, insurance, and Board compensation, as three new directors were added to the Board in connection with the Arq Acquisition. Further, driving the increase was \$0.3 million of additional rent and occupancy expense, primarily from additional leased space related to the Arq Acquisition, and higher research and development of \$0.2 million.

Depreciation, amortization, depletion and accretion

Depreciation and amortization expense increased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022 primarily due to depreciation and amortization of approximately \$0.7 million from the addition of long-lived assets and intangible assets acquired as part of the Arq Acquisition. Further driving the increase were higher production volumes compared to sales volumes for the three months ended September 30, 2023, resulting in \$0.3 million of additional absorption of depreciation in inventory.

Other Income (Expense), net

A summary of the components of other income (expense), net for the three months ended September 30, 2023 and 2022 is as follows:

(in thousands, except percentages)	Three Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Other income (expense):				
Earnings from equity method investments	\$ 412	\$ —	\$ 412	*
Interest expense	(787)	(83)	(704)	848 %
Other	725	315	410	130 %
Total other income	\$ 350	\$ 232	\$ 118	51 %

* Calculation not meaningful

Earnings from equity method investments

Earnings from equity method investments for the three months ended September 30, 2023 and 2022 represented cash distributions from Tinuum Group and Tinuum Services. Tinuum Group and Tinuum Services continuing to wind down their services in 2023.

Additional information related to equity method investments is included in Note 10 to the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report.

Interest expense

Interest expense increased for the three months ended September 30, 2023 compared to the corresponding quarter in 2022 primarily due to interest expense incurred for the three months ended September 30, 2023 of \$0.5 million related to the Term Loan, which was entered into on February 1, 2023 in connection with the Arq Acquisition, and \$0.1 million related to the Arq Loan, which we assumed in the Arq Acquisition.

Other

During the three months ended September 30, 2023, we earned \$0.6 million of interest income from cash on hand.

Income tax expense

For three months ended September 30, 2023, we had pretax loss of \$2.2 million and recorded no income tax expense or benefit due to the recording of a full valuation allowance based on our forecast of pretax loss for the year ending December 31, 2023. For the three months ended September 30, 2022, we had pretax loss of \$2.4 million and recorded no income tax benefit due to the recording of a full valuation allowance based on our forecast of pretax loss for the year ended December 31, 2022.

Comparison of the Nine Months Ended September 30, 2023 and 2022

Total Revenue and Cost of Revenue

A summary of the components of our revenues and cost of revenue for the nine months ended September 30, 2023 and 2022 is as follows:

(in thousands, except percentages)	Nine Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Revenues:				
Consumables	\$ 71,079	\$ 79,578	\$ (8,499)	(11)%
Total revenues	\$ 71,079	\$ 79,578	\$ (8,499)	(11)%
Operating expenses:				
Consumables cost of revenue, exclusive of depreciation and amortization	\$ 53,218	\$ 62,992	\$ (9,774)	(16)%

Consumables and consumables cost of revenue

For the nine months ended September 30, 2023, consumables revenues decreased from the corresponding period in 2022 primarily driven by a decrease in volumes sold, which comprised \$16.7 million of the total change. Product volumes decreased among power generation customers primarily due to low natural gas prices compared to the corresponding period in 2022, which contributed to decreased utilization of coal-fired generation and decreased demand for our products. Total consumables revenues also decreased for the nine months ended September 30, 2023 by approximately \$0.1 million from the corresponding period in 2022 due to unfavorable product mix. Offsetting these period over period decreases to Consumables revenues was an increase of approximately \$8.3 million from overall higher pricing of our products for the nine months ended September 30, 2023 compared to the corresponding period in 2022.

Consumables gross margin, exclusive of depreciation and amortization, increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022. Driving the increase in gross margin was a decrease in the price of our feedstock and additives, primarily as a result of decreased production volumes for the nine months ended September 30, 2023, compared to the corresponding period in 2022. Our consumables gross margin was negatively impacted by a decrease in volumes sold.

Other Operating Expenses

A summary of the components of our operating expenses, exclusive of cost of revenue items (presented above), for the nine months ended September 30, 2023 and 2022 is as follows:

<i>(in thousands, except percentages)</i>	Nine Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Operating expenses:				
Payroll and benefits	\$ 12,482	\$ 7,458	\$ 5,024	67 %
Legal and professional fees	8,060	7,395	665	9 %
General and administrative	9,177	5,662	3,515	62 %
Depreciation, amortization, depletion and accretion	7,276	4,765	2,511	53 %
Gain on sale of Marshall Mine, LLC	(2,695)	—	(2,695)	*
	\$ 34,300	\$ 25,280	\$ 9,020	36 %

* Calculation not meaningful

Payroll and benefits

Payroll and benefits increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022 primarily due to the addition of Arq employees, which increased expenses by \$4.2 million for the period, of which \$1.1 million related to severance expense of former executives of Arq. In addition, for the nine months ended September 30, 2023, we incurred severance related costs of \$1.0 million associated with the termination of an executive officer. Further, payroll and benefits expenses related to non-Arq employees for the nine months ended September 30, 2023 increased by \$0.7 million compared to the corresponding period in 2022. These increases were offset by a decrease in retention bonuses with our executive officers and certain other key employees of \$0.9 million, which were paid in full in January 2023.

Legal and professional fees

Legal and professional fees increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022 primarily as a result of an increase in costs incurred related to the Arq Acquisition, and were comprised mostly of legal and consulting fees. For the nine months ended September 30, 2023, we incurred \$2.4 million of legal and professional fees related to non-recurring transactions costs associated with the Arq Acquisition.

General and administrative

General and administrative expenses increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022 as a result of \$1.9 million of expenses incurred by Arq, which included \$0.9 million from rent and occupancy expense from additional leased space. Additional increases period over period of approximately \$1.7 million were increases in research and development, insurance, travel, recruiting and Board compensation, as three new directors were added to the Board in connection with the Arq Acquisition.

Depreciation, amortization, depletion and accretion

Depreciation and amortization expense increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022 primarily due to depreciation and amortization of approximately \$2.2 million from the addition of long-lived assets and intangible assets acquired in the Arq Acquisition. Also contributing to the increase was an increase in Depreciation and amortization expense due to higher production volumes compared to sales volumes for the nine months ended September 30, 2022, which resulted in \$0.3 million additional absorption of depreciation in inventory.

Gain on sale of Marshall Mine, LLC

As discussed above, for the nine months ended September 30, 2023, we recognized a gain of \$2.7 million on the sale of Marshall Mine, LLC.

Other Income (Expense), net

A summary of the components of our other income (expense), net for the nine months ended September 30, 2023 and 2022 is as follows:

<i>(in thousands, except percentages)</i>	Nine Months Ended September 30,		Change	
	2023	2022	(\$)	(%)
Other income (expense):				
Earnings from equity method investments	\$ 1,512	\$ 3,222	\$ (1,710)	(53)%
Interest expense	(2,155)	(259)	(1,896)	732 %
Other	1,510	(19)	1,529	(8,047)%
Total other income	\$ 867	\$ 2,944	\$ (2,077)	(71)%

Earnings from equity method investments

Earnings from equity method investments for the nine months ended September 30, 2023 and 2022 represented cash distributions received from Tinuum Group and Tinuum Services. The decrease was primarily due to Tinuum Group and Tinuum Services continuing to wind down their services in 2023.

Additional information related to equity method investments is included in Note 10 to the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report.

Interest expense

Interest expense increased for the nine months ended September 30, 2023 compared to the corresponding period in 2022 primarily due to interest expense of \$1.5 million related to the Term Loan, which was entered into on February 1, 2023 in connection with the Arq Acquisition, and interest expense of \$0.4 million incurred for the nine months ended September 30, 2023 related to the Arq Loan, which we assumed in the Arq Acquisition.

Other

During the nine months ended September 30, 2023, we earned \$1.3 million in interest income from cash on hand. For the nine months ended September 30, 2022, Other is primarily comprised of a loss of \$0.5 million recognized on the early settlement of an amount owed by Norit for reclamation of the Marshall Mine as a result of Norit's acquisition by a third party, which triggered a change of control provision in our supply agreement with Norit.

Income tax expense

For the nine months ended September 30, 2023, we had pretax loss of \$15.6 million and recorded income tax benefit related to out-of-period state income tax refunds received during the period. We recorded no additional income tax benefit for the nine months ended September 30, 2023 due to the recording of a full valuation allowance based on our forecast of pretax loss for the year ending December 31, 2023. For the nine months ended September 30, 2022, we had pretax loss of \$5.8 million and recorded no income tax benefit due to the recording of a full valuation allowance based on our forecast of pretax loss for the year ended December 31, 2022.

Non-GAAP Financial Measures

To supplement our financial information presented in accordance with U.S. GAAP (or "GAAP"), we provide non-GAAP measures of certain financial performance. These non-GAAP measures include EBITDA (EBITDA Loss) and Adjusted EBITDA (Adjusted EBITDA Loss). We have included these non-GAAP measures because management believes that they help to facilitate period to period comparisons of our operating results and provide useful information to both management and users of the financial statements by excluding certain expenses, gains and losses that can vary widely across different industries or among companies within the same industry and may not be indicative of core operating results and business outlook. Management uses these non-GAAP measures in evaluating the performance of our business.

These non-GAAP measures are not in accordance with, or an alternative to, measures prepared in accordance with GAAP and may be different from, and may not be comparable to, similarly titled non-GAAP measures used by other companies. In addition, these non-GAAP measures are not based on any comprehensive set of accounting rules or principles. These measures should only be used to evaluate our results of operations in conjunction with the corresponding GAAP measures.

We define EBITDA (EBITDA Loss) as net income (loss) adjusted for the impact of the following items that are either non-cash or that we do not consider representative of our ongoing operating performance: depreciation, amortization, depletion, accretion, amortization of upfront customer consideration ("Upfront Customer Consideration"), interest expense, net and income taxes. We define Adjusted EBITDA (Adjusted EBITDA Loss) as EBITDA (EBITDA Loss), reduced by the non-cash impact of equity earnings from equity method investments and gain on sale of Marshall Mine, LLC, increased by cash distributions from equity method investments, loss on early settlement of a long-term receivable and loss on change in estimate, asset retirement obligation. Because Adjusted EBITDA omits certain non-cash items, we believe that the measure is less susceptible to variances that affect our operating performance.

When used in conjunction with GAAP financial measures, we believe these non-GAAP measures are supplemental measures of operating performance that explain our operating performance for our period-to-period comparisons and against our competitors' performance. Generally, we believe these non-GAAP measures are less susceptible to variances that affect our operating performance results.

We expect the adjustments to EBITDA and Adjusted EBITDA in future periods will be generally similar. These non-GAAP measures have limitations as analytical tools and should not be considered in isolation or as a substitute for analyzing our results as reported under GAAP.

EBITDA and Adjusted EBITDA

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Net loss ⁽¹⁾	\$ (2,175)	\$ (2,391)	\$ (15,539)	\$ (5,750)
Depreciation, amortization, depletion and accretion	2,711	1,671	7,276	4,765
Amortization of Upfront Customer Consideration	127	127	381	381
Interest expense, net	224	44	822	163
Income tax benefit	—	—	(33)	—
EBITDA (EBITDA loss)	887	(549)	(7,093)	(441)
Cash distributions from equity method investees	412	—	1,512	5,613
Equity earnings	(412)	—	(1,512)	(3,222)
Gain on sale of Marshall Mine, LLC	—	—	(2,695)	—
Loss on early settlement of long-term receivable	—	—	—	535
Loss on change in estimate, asset retirement obligation	—	—	—	34
Adjusted EBITDA (Adjusted EBITDA loss)	\$ 887	\$ (549)	\$ (9,788)	\$ 2,519

(1) Included in Net loss for the three and nine months ended September 30, 2023 is zero and \$4.9 million, respectively, of transaction and integration costs incurred related to the Arq Acquisition. Included in Net Loss for the three and nine months ended September 30, 2022 is \$2.4 million and \$3.7 million, respectively, of transaction and integration costs incurred related to the Arq Acquisition. Additionally, for the nine months ended September 30, 2023, Net loss included \$4.2 million of Arq payroll and benefit costs. Further included in Net Loss for the three and nine months ended September 30, 2023 is \$1.3 million of severance expense related to two executive employees.

Liquidity and Capital Resources

Current Resources and Factors Affecting Our Liquidity

As of September 30, 2023, our principal sources of liquidity included:

- cash on hand, excluding \$8.8 million of restricted cash; and
- our operations.

As of September 30, 2023, our principal uses of liquidity included:

- our business operating expenses;
- capital and spare parts expenditures;
- payments on our lease obligations;
- payments on our debt obligations; and
- payments for reclamation work associated with the Five Forks Mine.

Cash Flows

Nine Months Ended September 30, 2023 vs. Nine Months Ended September 30, 2022

Cash and restricted cash decreased from \$76.4 million as of December 31, 2022 to \$61.3 million as of September 30, 2023. The following table summarizes our cash flows for the nine months ended September 30, 2023 and 2022, respectively:

(in thousands)	Nine Months Ended September 30,			Change
	2023	2022		
Cash and restricted cash (used in) provided by:				
Operating activities	\$ (21,145)	\$ 352	\$ (21,497)	
Investing activities	(17,304)	(1,966)	(15,338)	
Financing activities	23,338	(1,343)	24,681	
Net change in cash and restricted cash	\$ (15,111)	\$ (2,957)	\$ (12,154)	

Cash flow from operating activities

Cash flows used in operating activities for the nine months ended September 30, 2023 increased by \$21.5 million compared to the nine months ended September 30, 2022. The net increase was primarily attributable to net loss of \$15.5 million recognized for the nine months ended September 30, 2023 compared to net loss of \$5.8 million recognized for the nine months ended September 30, 2022; the add-back of a non-cash gain of \$2.7 million recognized from the sale of Marshall Mine, LLC for the nine months ended September 30, 2023; a decrease in accounts payable and accrued expenses of \$13.9 million, primarily from payments of Arq assumed liabilities, comprised of accrued employee-related compensation and accrued transaction costs, in the Arq Acquisition; payment of the balance of retention bonuses; an increase in Other long-term assets, net of \$5.8 million, primarily from a payment received from settlement on a long-term receivable in 2022; and a decrease in Distributions from equity method investees, return on investment of \$2.3 million. Offsetting the net increase in cash flows used in operating activities for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 was a decrease in non-cash net working capital, excluding accounts payable and accrued expenses, of \$8.2 million, a decrease in Earnings from equity method investments of \$1.7 million and an increase in Depreciation, amortization, depletion and accretion of \$2.5 million due to a higher asset base from the Arq Acquisition.

Cash flow from investing activities

Cash flows used in investing activities increased for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 by \$15.3 million primarily as a result of an increase in property, plant and equipment additions of \$10.8 million from the Arq Acquisition; an increase in mine development costs of \$1.5 million; a decrease in distributions from equity earnings in excess of cumulative earnings of \$1.8 million; a cash payment of \$2.2 million made in March 2023 required in the sale of Marshall Mine, LLC; and a decrease in cash received from the sale of property and equipment of \$1.2 million. Offsetting the net increase in cash flows used in investing activities was \$2.2 million of cash acquired in the Arq Acquisition.

Cash flow from financing activities

Cash flows provided by financing activities for the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 increased by \$24.7 million primarily due to the net borrowings, net of debt issuance costs paid, of \$8.5 million from the Term Loan; net proceeds from the PIPE Investment of \$15.2 million; and net proceeds from common stock sold to a related party of \$1.0 million .

Material Cash Requirements

With the Arq Acquisition, we assumed liabilities, including the Arq Loan, that will increase our cash requirements for the next 12 months and beyond. In addition, our success with the Arq acquisition will require significant capital expenditures as quantified below. Under the payment terms of the Term Loan, we are required to make quarterly interest payments through February 1, 2027, and a balloon payment of principal and PIK interest totaling approximately \$12.2 million on this date. We expect that our cash on hand as of September 30, 2023 will provide sufficient liquidity to fund contractual obligations due and expected operating loss for the next 12 months.

Capital Expenditures

For 2023, we expect to incur between \$35.0 million and \$40.0 million in capital expenditures as follows:

- Between \$14.0 million and \$16.0 million is forecast for capital improvements at the Red River Plant related to scheduled maintenance improvements and to complete current capital projects; and
- Between \$21.0 million and \$24.0 million is forecast for growth capital for the modifications of the Red River Plant and Corbin Plant in order to incorporate Arq Powder as feedstock.

For the nine months ended September 30, 2023, we incurred \$17.0 million in capital expenditures. We expect to fund all capital expenditures for 2023 from cash on hand.

Surety Bonds and Mine Obligations

As of September 30, 2023, we had outstanding surety bonds with regulatory commissions totaling \$7.5 million related to reclamation of the Five Forks Mine. As of September 30, 2023, and as required by a surety bond provider, we also held restricted cash of \$8.5 million pledged as collateral for such surety bonds related to the Five Forks Mine and other surety obligations.

As September 30, 2023, we had outstanding surety bonds with a regulatory commission totaling \$3.0 million for reclamation obligations of the land adjacent to the Corbin Facility.

As of September 30, 2023, we had an outstanding surety bond with a regulatory commission totaling \$0.7 million for reclamation obligations of Mine 4 located in West Virginia.

We expect that the obligations secured by these surety bonds associated with the Five Forks Mine and the Corbin Facility will be performed in the ordinary course of business and in accordance with the applicable contractual terms. To the extent that we perform the obligations, the related surety bonds should be released and collateral requirements reduced. However, in the event any surety bond is called, our indemnity obligations could require us to reimburse the surety bond provider. We intend to fund our mine reclamation costs associated with the Five Forks Mine and the Corbin Facility from cash on hand.

We have a customer supply agreement that requires us to post a performance bond in an amount equal to the annual contract value of \$3.7 million. As of September 30, 2023, the remaining commitment under this customer contract, which expires on December 31, 2023, was approximately \$0.4 million.

Critical Accounting Policies and Estimates

Our critical accounting policies and estimates have not changed from those reported in Item 7 - "Management's Discussion and Analysis of Financial Condition and Results of Operations" of Part II in the 2022 Form 10-K.

Recently Issued Accounting Standards

Refer to Note 1 of the Condensed Consolidated Financial Statements included in Item 1 of this Quarterly Report for information regarding recently issued accounting standards applicable to us.

Forward-Looking Statements Found in this Report

This Quarterly Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act") that involve risks and uncertainties. In particular such forward-looking statements are found in this Item 2 of Part I above. Words or phrases such as "anticipates," "believes," "expects," "intends," "plans," "estimates," "predicts," the negative expressions of such words, or similar expressions are used in this Quarterly Report to identify forward-looking statements, and such forward-looking statements include, but are not limited to, statements or expectations regarding:

- (a) the anticipated effects from an increase in pricing of our AC products;
- (b) the anticipated effects from an increase in costs of our AC products and related cost increases in supply and logistics;

- (c) expected supply and demand for our activated carbon ("AC ") products and services;
- (d) increasing competition in the AC market;
- (e) the effects of the Arq Acquisition;
- (f) the ability to successfully integrate Arq's business;
- (g) the ability to develop and utilize Arq's products and technology;
- (h) the ability to make Arq's products commercially viable;
- (i) the expected future demand of Arq's products;
- (j) future level of research and development activities;
- (k) future plant capacity expansions and site development projects;
- (l) the effectiveness of our technologies and the benefits they provide;
- (m) probability of any loss occurring with respect to certain guarantees made by Tinuum Group;
- (n) the timing of awards of, and work and related testing under, our contracts and agreements and their value;
- (o) the timing and amounts of, or changes in, future revenues, backlog, funding for our business and projects, margins, expenses, earnings, tax rates, cash flows, royalty payment obligations, working capital, liquidity and other financial and accounting measures;
- (p) the amount and timing of future capital expenditures needed for our APT business and Arq to fund our business plan;
- (q) awards of patents designed to protect our proprietary technologies both in the U.S. and other countries;
- (r) the adoption and scope of regulations to control certain chemicals in drinking water and other environmental concerns;
- (s) the impact of adverse global macroeconomic conditions, including rising interest rates, recession fears and inflationary pressures, and geopolitical events or conflicts;
- (t) opportunities to effectively provide solutions to U.S. coal-related businesses to comply with regulations, improve efficiency, lower costs and maintain reliability;
- (u) the impact of prices of competing power generation sources such as natural gas and renewable energy on demand for our products; and
- (v) bank failures or other events affecting financial institutions.

The forward-looking statements included in this Quarterly Report involve risks and uncertainties. Actual events or results could differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to, timing of new and pending regulations and any legal challenges to or extensions of compliance dates of them; the U.S. government's failure to promulgate regulations that benefit our business; changes in laws and regulations, accounting rules, prices, economic conditions and market demand; impact of competition; availability, cost of and demand for alternative energy sources and other technologies; technical, start up and operational difficulties; our inability to commercialize our APT technologies on favorable terms; our inability to ramp up our operations to effectively address recent and expected growth in our business; loss of key personnel; availability of materials and equipment for our business; intellectual property infringement claims from third parties; pending litigation; as well as other factors relating to our business strategy, goals and expectations concerning the Arq Acquisition (including future operations, future performance or results); our ability to maintain relationships with customers, suppliers and other with whom we do business, or our results of operations and business generally; risks related to diverting management's attention from our ongoing business operations; the ability to meet Nasdaq's listing standards following the consummation of the Arq Acquisition; costs related to the Arq Acquisition; opportunities for additional sales of our lignite AC products and end-market diversification; our ability to meet customer supply requirements; the rate of coal-fired power generation in the U.S., the timing and cost of capital expenditures and the resultant impact to our liquidity and cash flows; as described in our filings with the SEC, with particular emphasis on the risk factor disclosures contained in those filings. You are cautioned not to place undue reliance on the forward-looking statements made in this Quarterly Report and to consult filings we have made and will make with the SEC for additional discussion concerning risks and uncertainties that may apply to our business and the ownership of our securities. The forward-looking statements contained in this Quarterly Report are presented as of the date hereof, and we disclaim any duty to update such statements unless required by law to do so.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

The information under this Item is not required to be provided by smaller reporting companies.

Item 4. Controls and Procedures**Evaluation of Disclosure Controls and Procedures**

As required by Rule 13a-15(b) under the Exchange Act, we have evaluated, under the supervision of and with the participation of our management, including our principal executive officer and principal financial officer, the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Based upon this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective as of September 30, 2023.

Changes in Internal Control Over Financial Reporting

On February 1, 2023, we acquired Arq and excluded their business from our assessment of internal control over financial reporting as of September 30, 2023, as allowed under general guidance issued by the Staff of the Securities and Exchange Commission. There have been no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fiscal quarter ended September 30, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. The Company is evaluating the impacts of the Arq Acquisition to our internal control over financial reporting as allowed under general guidance issued by the Staff of the Securities and Exchange Commission.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we are involved in litigation, claims and other proceedings related to the conduct of our business. Information with respect to this item may be found in Note 8 "Commitments and Contingencies" to the consolidated financial statements included in Item 1 of Part I of this Quarterly Report.

Item 1A. Risk Factors

There are no material updates to our risk factors as disclosed in the 2022 Form 10-K except as described below.

Bank failures or other events affecting financial institutions could have a material adverse effect on our business, results of operations or financial condition, or have other adverse consequences.

We primarily use two U.S. banks for our operations. Cash deposits are held by these banks and may, at times, exceed the Federal Deposit Insurance Corporation ("FDIC") insurance limits. The failure of these banks or events involving limited liquidity, non-performance or other adverse conditions in the financial or credit markets impacting these banks, or concerns or rumors about such events, may lead to disruptions in access to our cash balances, adversely impact our liquidity or limit our ability to process transactions related to our customers. In the event of a failure of these banks, there can be no assurance that our deposits in excess of the FDIC or other comparable insurance limits will be recoverable or, even if ultimately recoverable, there may be significant delays in our ability to access those funds. Furthermore, bank failures, non-performance, or other adverse developments that affect other financial institutions could impair the ability of these banks to honor our commitments. Such events could have a material adverse effect on our financial condition or results of operations.

Similarly, our customers may be adversely affected by any bank failure or other event affecting financial institutions. If our customers are unable, or if our customers in the future are unable, to meet their obligations to us as a result of a bank failure or other event affecting financial institutions, we may be exposed to potential risks that could impact our financial condition or results of operations. Furthermore, a significant change in the liquidity or financial position of our customers could cause unfavorable trends in cash collections, which could have a material adverse effect on our financial condition or results of operations.

Item 2. Unregistered Sales of Equity Securities, Use of Proceeds and Issuer Purchases of Equity Securities

On July 17, 2023, we entered into a Subscription Agreement (the "Subscription Agreement") with Mr. Robert "Bob" Rasmus and entities controlled by Mr. Rasmus, in connection with his appointment as our President and Chief Executive Officer. Pursuant to the Subscription Agreement, Mr. Rasmus subscribed for and agreed to purchase 950,000 shares of our common stock, par value \$0.001 per share, from the Company for an aggregate purchase price of \$1,800,000 (at a price per share of approximately \$1.90). In September 2023, we received cash of \$1.0 million and issued 527,779 shares of our common stock to Mr. Rasmus pursuant to the Subscription Agreement.

The securities issued to Mr. Rasmus under the Subscription Agreements were issued pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act, Rule 506 of Regulation D, which is promulgated thereunder, and Regulations S of the Securities Act. We are relying on this exemption from registration based in part on representations made by Mr. Rasmus under the Subscription Agreement. The sale of the securities pursuant to the Subscription Agreement has not been registered under the Securities Act or any state securities laws. The securities may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements.

Share Repurchases

We maintain a program to repurchase up to \$20.0 million of shares of our common stock under a stock repurchase program (the "Stock Repurchase Program") through open market transactions at prevailing market prices, of which \$7.0 million remained available as of September 30, 2023. No repurchases were made during the three months ended September 30, 2023.

Tax Withholding

The following table contains information about common shares that we withheld from delivering to employees during the third quarter of 2023 to satisfy their respective tax obligations related to stock-based awards.

Period	Total Number of Common Shares Purchased	Average Price Paid per Common Share		Total Number of Common Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number (or Dollar Value) of Common Shares that May Yet Be Purchased Under the Plans or Programs
July 1 to July 31, 2023	—	—	—	N/A	N/A
August 1 to August 31, 2023	1,321	\$ 1.92	—	N/A	N/A
September 1 to September 30, 2023	26,808	\$ 1.72	—	N/A	N/A

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

The statement concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in Exhibit 95.1 to this Quarterly Report.

Item 5. Other Information

Amended and Restated Bylaws

On November 7, 2023, in connection with the effectiveness of new SEC rules regarding universal proxy cards, certain recent changes to the Delaware General Corporation Law (the "DGCL"), and a periodic review of the bylaws of the Company, the board of directors of Company (the "Board") approved and adopted an amendment and restatement of the Company's amended and restated bylaws (as so amended, the "Amended and Restated Bylaws"). The Amended and Restated Bylaws became effective immediately upon approval by the Board.

Among other things, the amendments effected by the Amended and Restated Bylaws:

- update Section 2.03 to reflect certain procedural requirements related to director nominations by stockholders in light of the recently adopted Rule 14a-19 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"); and (ii) reflect certain other related changes, including requiring (1) additional background information and disclosures regarding stockholders proposing director nominations and other business, director nominees proposed by stockholders, and other persons related to a stockholder's solicitation of proxies; and (2) any stockholder submitting a nomination notice to make a representation and provide confirmation as to whether such stockholder intends to solicit proxies in support of director nominees other than the Company's nominees in accordance with Rule 14a-19 under the Exchange Act and the Amended and Restated Bylaws and to provide evidence that the stockholder has complied with such requirements;
- provide in Section 2.03(b) that any notice of proposals of business and/or director nominations must be delivered to or mailed and received at the principal executive offices of the Company (i) in the case of an annual meeting of the stockholders, not later than the close of business on the one hundred twentieth (120th) calendar day and not earlier than the close of business on the one hundred fiftieth (150th) calendar day prior to the one-year anniversary of the previous year's annual meeting of stockholders; *provided, however,* that if no annual meeting was held or deemed to have been held in the previous year or the date of the annual meeting has been changed by more than thirty (30) calendar days from the date on which the previous year's annual meeting was held, notice by the stockholder to be timely must be so received not earlier than the close of business on the one hundred twentieth (120th) day prior to such annual meeting and not later than the close of business on the later of the ninetieth (90th) day prior to such annual meeting or ten (10) calendar days following the date of public disclosure of the date of such meeting; and (ii) in the case of a special meeting of the stockholders, not earlier than the close of business on the one hundred twentieth (120th) calendar day prior to the special meeting and not later than the close of business on the later of the ninetieth (90th) calendar day prior to the date of the special meeting or the tenth (10th) day following the date of public disclosure of the date of the special meeting and of the nominees proposed by the Board to be elected at such meeting;

- add a new sub-section 2.03(d), which requires any director nominee to provide certain consents and representations related to voting, certain third-party arrangements and compliance with certain policies and procedures and a written questionnaire with respect to the nominee's background and qualifications as well as to provide any other questionnaires or information that may be necessary to assess the nominee's qualifications and eligibility for board service;
- add a new sub-section 2.03(e) regarding certain potential written verifications that may be required of the nominating stockholder;
- add certain procedural requirements to provisions (i) in Section 2.03(g) regarding special meetings of stockholders, such as making it clear that any notice of a director nomination at a special meeting called for purposes of electing directors under Section 2.03(g) or any stockholder-requested special meeting pursuant to Section 2.04 must include the same information, representations, questionnaires and agreements as required under the advance notice provisions for annual meetings of stockholders; and (ii) in Section 2.04, including with respect to record date requirement, information to be included in the special meeting request and documentary evidence of stock ownership, consequences of revocation and failure to appear, certain limitations as set forth in sub-section 2.04(c) and definition of beneficial ownership for purposes of these provisions;
- clarify effects of non-compliance with the advance notice provisions, including powers of the chair of the meeting to disregard proposals of business and/or director nominations submitted by stockholders;
- require in new sub-section 2.03(i) that a stockholder directly or indirectly soliciting proxies from other stockholders use a proxy card color other than white, which is reserved solely for use for solicitation by the Board;
- clarify in Section 2.06 the notice procedures for adjournments of virtual meetings of stockholders and eliminate the requirement in Section 2.07 that the list of stockholders be open to examination at meetings of stockholders, in each case in accordance with the DGCL;
- clarify in Section 2.09 as to who presides at meetings of stockholders and reflect additional procedures to define the powers of the chair of stockholders' meetings and to specify, without limitation, the universe of meeting rules properly determined by the Board or such chair;
- clarify in Section 2.10 that the plurality voting standard applies to director elections, all other matters shall be determined by majority of the votes cast (unless otherwise required by law) and add certain quorum requirements in alignment with the DGCL;
- revise the Board's special meeting provisions in Section 3.06 to make it clear that majority of the Board can also call special meetings and clarify quorum requirements
- provide that "officers" for purposes of the indemnification provisions set forth in Article VII include any individual designated by the Board as an officer of the Company or as defined under the DGCL;
- incorporate other non-substantive, ministerial, clarifying and conforming changes, including, among other things, with respect to the use of gender-neutral terms, updating officer provisions to include the Chief Executive Officer role and explicitly providing that any officer office may be left vacant, including definitions of "close of business" and "qualified representative" and eliminating certain provisions that are otherwise addressed in the Delaware statute (such as provisions related to books and records).

The foregoing description of the Amended and Restated Bylaws does not purport to be complete and is qualified in its entirety by reference to the full text of the Amended and Restated Bylaws, a copy of which is filed as Exhibit 3.1 to this Quarterly Report on Form 10-Q and incorporated herein by reference.

Item 6. Exhibits

Exhibit No.	Description	Form	File No.	Incorporated by Reference	Exhibit	Filing Date
3.1	Conformed Copy of the Bylaws of Advanced Emissions Solutions, Inc., as amended*					
10.1	Subscription Agreement by and between Robert E. Rasmus, RER Legacy Investments II LLC and Advanced Emissions Solutions, Inc., dated July 17, 2023.	8-K	001-37822	10.1	July 17, 2023	
10.2	Employment Agreement by and between Robert E. Rasmus and Advanced Emissions Solutions, Inc., dated July 17, 2023.	8-K	001-37822	10.2	July 17, 2023	
10.3	Employment Agreement by and between Jeremy D. Williamson and Advanced Emissions Solutions, Inc., dated September 18, 2023.	8-K	001-37822	10.1	September 18, 2023	
31.1	Certification of Principal Executive Officer of Advanced Emissions Solutions, Inc. Pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a)*					
31.2	Certification of Principal Financial Officer of Advanced Emissions Solutions, Inc. Pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a)*					
32.1	Certification of Principal Executive Officer and Principal Financial Officer of Advanced Emissions Solutions, Inc. Pursuant to 18 U.S.C Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*					
95.1	Mine Safety Disclosure Exhibit*					
101.SCH	XBRL Schema Document*					
101.CAL	XBRL Calculation Linkbase Document*					
101.LAB	XBRL Label Linkbase Document*					
101.PRE	XBRL Presentation Linkbase Document*					
101.DEF	Taxonomy Extension Definition Linkbase Document*					
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)*					

Notes:

* Filed herewith.

** Portions of this exhibit have been omitted pursuant to a request for confidential treatment.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Advanced Emissions Solutions, Inc.
(Registrant)

November 8, 2023

By: /s/ Robert Rasmus
Robert Rasmus
Chief Executive Officer
(Principal Executive Officer)

November 8, 2023

By: /s/ Stacia Hansen
Stacia Hansen
Chief Accounting Officer
(Principal Financial Officer)

**AMENDED AND RESTATED BYLAWS
OF
ADVANCED EMISSIONS SOLUTIONS, INC.**

**ARTICLE I
OFFICES**

Section 1.1 Offices. Advanced Emissions Solutions, Inc. (hereinafter called the “**Corporation**”) may have offices at such places, both within and without the State of Delaware, as the board of directors of the Corporation (the “**Board of Directors**”) from time to time shall determine or the business of the Corporation may require. The registered office of the Corporation shall be fixed in the Certificate of Incorporation of the Corporation (as the same may be amended and/or restated from time to time and together with any certificate of designations relating to any series of preferred stock in effect from time to time, the “**Certificate of Incorporation**”).

**ARTICLE II
MEETINGS OF THE STOCKHOLDERS**

Section 2.1 Place of Meetings. All meetings of the stockholders shall be held at such place, if any, either within or without the State of Delaware, as is designated from time to time by resolution of the Board of Directors and stated in the notice of meeting.

Section 2.2 Annual Meeting. The annual meeting of the stockholders for the election of directors and for the transaction of such other business as may properly come before the meeting shall be held at such date, time and place, if any, as are determined by the Board of Directors and stated in the notice of the meeting. The Board of Directors may postpone, reschedule or cancel any annual meeting of stockholders previously scheduled by the Board of Directors.

Section 2.3 Advance Notice of Stockholder Nominations and Other Proposals of Business

(a) **Definitions.**

“**Affiliate**” or “**Associate**” shall have the respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Securities Exchange Act of 1934, as in effect on the date these Bylaws are adopted.

“**Close of Business**” means 5:00 p.m. local time at the principal executive offices of the Corporation on any calendar day, whether or not the day is a business day.

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Public Disclosure” or “Publicly Disclosed” means a disclosure made in a press release reported by the Dow Jones News Services, The Associated Press or a comparable national news service or in a document filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Exchange Act.

“Qualified Representative,” for purposes of these Amended and Restated Bylaws (as the same may be amended and/or restated from time to time, the **“Bylaws”**), means a person must be a duly authorized officer, manager or partner of such stockholder or authorized by a writing executed by such stockholder (or a reliable reproduction of the writing) delivered to the Corporation prior to the making of such nomination or proposal at such meeting (and in any event not fewer than five (5) business days before the meeting) stating that such person is authorized to act for such stockholder as proxy at the meeting of stockholders.

(b) **Timely Notice.** At an annual meeting of the stockholders, only such nominations of persons for the election of directors and such other business shall be conducted as having been properly brought before the meeting. To be properly brought before an annual meeting, nominations or such other business must be: (i) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors or any authorized committee thereof, (ii) brought before the meeting by or at the direction of the Board of Directors or any authorized committee thereof, or (iii) otherwise properly brought before an annual meeting by a stockholder who is entitled to vote at the meeting and who complies with the notice procedures set forth in this Section 2.03 and who is a stockholder of record of the Corporation at the time such notice of meeting is given. In addition, any proposed business must be a proper subject for stockholder action. For the avoidance of doubt, the foregoing clause (iii) shall be the exclusive means for a stockholder to make nominations or propose other business at an annual meeting of stockholders (other than a proposal included in the Corporation’s proxy statement pursuant to and in compliance with Rule 14a-8 under the Exchange Act).

For nominations or other business to be properly brought before an annual meeting by a stockholder pursuant to clause (iii) above, the stockholder or stockholders of record intending to propose the nomination or other business (the **“Proposing Stockholder”**) must have given timely notice thereof pursuant to this Section 2.03 in writing to the secretary of the Corporation even if such matter is already the subject of any notice to the stockholders or Public Disclosure from the Board of Directors. To be timely, a Proposing Stockholder’s notice must be delivered to or mailed and received at the principal executive offices of the Corporation in the case of an annual meeting of the stockholders, not later than the Close of Business on the one hundred twentieth (120th) calendar day and not earlier than the Close of Business on the one hundred fiftieth (150th) calendar day prior to the one-year anniversary of the previous year’s annual meeting of stockholders; *provided, however*, that if no annual meeting was held or deemed to have been held in the previous year or the date of the annual meeting has been changed by more than thirty (30) calendar days from the date on which the previous year’s annual meeting was held, notice by the stockholder to be timely must be so received not earlier than the Close of Business on the one hundred twentieth (120th) day prior to such annual meeting and not later than the Close of Business on the later of the ninetieth (90th) day prior to such annual meeting or ten (10) calendar days following the date of Public Disclosure of the date of such meeting. In no

event shall an adjournment, recess or postponement of an annual meeting commence a new notice time period (or extend any notice time period) for the giving of a Proposing Stockholder's notice as described above. A Proposing Stockholder's notice given in accordance with this Section 2.03 must contain the names of only the nominees for whom such stockholder (or beneficial owner, if any) intends to solicit proxies, and a stockholder shall not be entitled to make additional or substitute nominations following the expiration of the time periods set forth in this Section 2.03(b); *provided* that, in the event a stockholder's notice includes one or more substitute nominees, such stockholder must provide timely notice of such substitute nominee(s) in accordance with the provisions of this Section 2.03 (including, without limitation, satisfaction of all applicable informational requirements set forth therein). For the avoidance of doubt, the number of nominees a stockholder may nominate for election at the annual meeting (or in the case of a stockholder giving the notice on behalf of a beneficial owner, the number of nominees a stockholder may nominate for election at the annual meeting on behalf of the beneficial owner) shall not exceed the number of directors to be elected at such annual meeting.

Notwithstanding the foregoing, if the number of directors to be elected to the Board of Directors at an annual meeting is increased and there is no Public Disclosure by the Corporation naming all of the nominees for director or specifying the size of the increased Board of Directors at least ten (10) calendar days prior to the last day a stockholder may deliver a notice in accordance with the preceding provisions of this paragraph, then a stockholder's notice shall be considered timely, but only with respect to nominees for any new positions created by such increase, if it is received by the secretary of the Corporation not later than the tenth (10th) calendar day following the day on which such Public Disclosure is first made by the Corporation.

(c) Additional Requirements for Notices of Stockholder Nominations or Other Proposals of Business. In addition to complying with the provisions of Section 2.03(b) above, a Proposing Stockholder's notice to the secretary of the Corporation nominating any person or persons for election to the Board of Directors or proposing any other business shall set forth (i) as to each person whom the stockholder proposes to nominate for election or re-election as a director: (A) the name, age, business address and residential address of each nominee proposed in such notice, (B) the principal occupation or employment of each such nominee, (C) the number of shares of capital stock of the Corporation that are owned of record and beneficially by each such nominee (if any), (D) such other information concerning each such nominee as would be required to be disclosed in a proxy statement soliciting proxies for the election of such nominee as a director in an election contest (even if an election contest is not involved) or that is otherwise required to be disclosed under Section 14(a) of the Exchange Act and the rules and regulations promulgated thereunder, (E) a written statement, not to exceed five hundred (500) words, in support of such person, (F) the information required to be submitted regarding nominees pursuant to Section 2.03(d) below, including, within the time period specified in Section 2.03(d), all fully completed and signed questionnaires provided by the Corporation (which will be provided by the Corporation within ten (10) calendar days following a request therefor by a stockholder seeking to nominate nominees); (ii) as to any other business that the stockholder proposes to bring before the meeting: (A) a brief description of the business desired to be brought before the meeting, (B) the text of the proposal or business (including the text of any resolutions proposed for consideration and in the event that such business includes a

proposal to amend the Bylaws or the Certificate of Incorporation, the language of the proposed amendment), (C) the reasons for conducting such business at the meeting and any substantial interest (within the meaning of Item 5 of Schedule 14A under the Exchange Act) in such business of such stockholder and the beneficial owner (within the meaning of Section 13(d) of the Exchange Act), if any, on whose behalf the nomination or proposal is made; and (iii) as to the Proposing Stockholder: (A) the name and address of the Proposing Stockholder as they appear on the Corporation's books and of the beneficial owner, if any, on whose behalf the nomination is being made or other proposal of business is being submitted, (B) the class and number of shares of the Corporation that are owned (beneficially and of record) by the Proposing Stockholder (and by the beneficial owner, if any, on whose behalf the nomination is being made or other proposal of business is being submitted), as of the date of the Proposing Stockholder's notice, and a representation that the Proposing Stockholder will notify the Corporation in writing of the class and number of such shares owned of record and beneficially as of the record date for the meeting promptly following the later of the record date or the date notice of the record date is first Publicly Disclosed, (C) a description of any agreement, arrangement or understanding with respect to such nomination or other proposal of business between or among the Proposing Stockholder, the beneficial owner, if any, on whose behalf the nomination is being made, and any of their Affiliates or Associates, and any other person, and a representation that the Proposing Stockholder will notify the Corporation in writing of any such agreement, arrangement or understanding in effect as of the record date for the meeting promptly following the later of the record date or the date notice of the record date is first Publicly Disclosed, (D) a description of any agreement, arrangement or understanding (including any derivative or short positions, profit interests, options, hedging transactions, and borrowed or loaned shares and regardless of whether the agreement, arrangement or understanding is to be settled with shares or with cash based on the notional amount or value of outstanding shares of stock of the Corporation) that has been entered into as of the date of the Proposing Stockholder's notice by, or on behalf of, the Proposing Stockholder, the beneficial owner, if any, on whose behalf the nomination is being made or a proposal of other business is being submitted, or any of their Affiliates or Associates, the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or maintain, increase or decrease the voting power of the Proposing Stockholder, the beneficial owner, if any, on whose behalf the nomination is being made or a proposal of other business is being submitted, or any of their Affiliates or Associates with respect to shares of stock of the Corporation, and a representation that the Proposing Stockholder will notify the Corporation in writing of any such agreement, arrangement or understanding in effect as of the record date for the meeting promptly following the later of the record date or the date notice of the record date is first Publicly Disclosed, (E) a representation that the Proposing Stockholder is a holder of record of shares of the Corporation entitled to vote at the meeting and intends to appear in person or via a Qualified Representative at the meeting to nominate the person or persons specified in the notice or propose other business, (F) a representation whether or not the Proposing Stockholder, or the beneficial owner, if any, on whose behalf the nomination is being made or other proposal of business is being submitted, or any of their Affiliates or Associates, will, or will be part of a group that will (1) engage in a solicitation with respect to a nomination or proposal of business and, if so, whether such solicitation will be conducted as an exempt solicitation under Rule 14a-2(b) of the Exchange Act, and the name of each participant in such solicitation; (2) (x) in the case of a proposal of business other than

nominations, whether such person or group intends to deliver, through means satisfying each of the conditions that would be applicable to the Corporation under either Rule 14a-16(a) or Rule 14a-16(n) of the Exchange Act, a proxy statement and form of proxy to holders of at least the percentage of the Corporation's voting shares required under applicable law to carry the proposal, or (y) in the case of any solicitation that is subject to Rule 14a-19 of the Exchange Act, confirming that such person or group will deliver, through means satisfying each of the conditions that would be applicable to the Corporation under either Rule 14a-16(a) or Rule 14a-16(n) of the Exchange Act, a proxy statement and form of proxy to holders of at least 67% of the voting power of the Corporation's capital stock entitled to vote generally in the election of directors; and/or (3) otherwise solicit proxies with respect to one or more nominees or proposals of other business (in each case, specifically identifying each participant in the solicitation and the means by which the participants intend to solicit proxies or votes), (G) a representation that promptly after soliciting the holders of the Corporation's stock referred to in the representation required under clause (c)(iii)(F) of this Section 2.03, and in any event no later than the tenth (10th) calendar day before such meeting of stockholders, such stockholder or beneficial owner will provide the Corporation with documents, which may take the form of a certified statement and documentation from a proxy solicitor, specifically demonstrating that the necessary steps have been taken to deliver a proxy statement and form of proxy to holders of such percentage of the Corporation's stock, and (H) a description of any performance-related fees (other than an asset-based fee) that such stockholder, beneficial owner, if any, or any Associate or Affiliate of such person, is directly or indirectly entitled to based on any increase or decrease in the value of shares of the Corporation or based on any agreement, arrangement or understanding under clause (c)(iii)(D) of this Section 2.03 and a representation that the stockholder will notify the Corporation in writing of any performance-related fees in effect as of the record date for the meeting promptly following the later of the record date or the date notice of the record date is first Publicly Disclosed.

(d) Submission of Additional Information Regarding Director Nominees. As to each person whom a stockholder proposes to nominate for election or re-election as a director of the Corporation pursuant to Section 2.03, in addition to information included in Section 2.03(c) above, the Proposing Stockholder must also deliver to the secretary of the Corporation at the principal executive offices of the Corporation the following information: (i) a written representation and agreement, which shall be signed by the person proposed to be nominated and pursuant to which such person shall represent and agree that such person: (A) consents to being named as a nominee in a proxy statement and form of proxy relating to the meeting at which directors are to be elected and to serving as a director if elected, and currently intends to serve as a director for the full term for which such person is standing for election, (B) is not and will not become a party to any agreement, arrangement or understanding with, and has not given any commitment or assurance to, any person or entity: (1) as to how the person, if elected as a director, will act or vote on any issue or question, except as disclosed in such representation and agreement; or (2) that could limit or interfere with the person's ability to comply, if elected as a director, with such person's fiduciary duties under applicable law, (C) is not and will not become a party to any agreement, arrangement or understanding with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a director or nominee, except as disclosed

in such representation and agreement, and (D) if elected as a director, will comply with all of the Corporation's corporate governance policies and guidelines related to conflict of interest, confidentiality, stock ownership and trading policies and guidelines, and any other policies and guidelines applicable to directors (which will be provided within ten (10) calendar days following a request therefor); (ii) a fully completed and signed questionnaire in the same form required of the Corporation's director nominees (a "Questionnaire") (which form will be provided within ten (10) days following a request therefor); and (iii) a representation that each person whom a Proposing Stockholder proposes to nominate for election or re-election as a director of the Corporation pursuant to Section 2.03 will provide to the Corporation such other information as the Corporation may reasonably request, including such information reasonably necessary for the Corporation to determine whether a nominee will satisfy any qualifications or requirements imposed by the Certificate of Incorporation or these Bylaws, any law, rule, regulation or listing standard that may be applicable to the Corporation, or relevant to a determination whether such person can be considered an independent director. If a Proposing Stockholder has submitted notice of an intent to nominate a candidate for election or re-election as a director pursuant to Section 2.03, all written and signed representations and agreements and all fully completed and signed Questionnaires described in this Section 2.03(d) shall be provided to the Corporation at the same time as such notice, and the additional information described in this Section 2.03(d) shall be provided to the Corporation promptly upon request by the Corporation, but in any event within ten (10) calendar days after such request (or by the day prior to the day of the annual meeting, if earlier). All information provided pursuant to this Section 2.03Section 2.03(d) shall be deemed part of the Proposing Stockholder's notice submitted pursuant to Section 2.03.

(e) **Certain Additional Requirements.** Notwithstanding anything in this Section 2.03 to the contrary, if any information or communication submitted pursuant to this Section 2.03 is inaccurate or incomplete in any material respect (as determined by the Board of Directors (or any authorized committee thereof)) such information shall be deemed not to have been provided in accordance with this Section 2.03. Upon written request of the secretary of the Corporation, the Proposing Stockholder giving notice of an intent to nominate a candidate for election or propose other business shall provide, within ten (10) calendar days after delivery of such request (or such longer period as may be specified in such request), (i) written verification, satisfactory in the reasonable discretion of the Corporation, to demonstrate the accuracy of any information submitted and (ii) a written affirmation of any information submitted as of an earlier date. If such stockholder fails to provide such written verification or affirmation within such time period, the information as to which written verification or affirmation was requested may be deemed not to have been provided in accordance with this Section 2.03. The obligation to update and supplement as set forth in this Section 2.03 or any other section of these Bylaws shall not limit the Corporation's rights with respect to any deficiencies in any notice provided by a stockholder, extend any applicable deadlines hereunder or under any other provision of these Bylaws or enable or be deemed to permit a Proposing Stockholder who has previously submitted notice hereunder or under any other provision of these Bylaws to amend or update any nomination or other business proposal or to submit any new nomination or other business proposal, including by changing or adding nominees, matters, business and/or resolutions proposed to be brought before a meeting of stockholders.

(f) **Rule 14a-8 Proposals.** This Section 2.03 shall not apply to a proposal proposed to be made by a stockholder if the stockholder has notified the Corporation of his or her intention to present the proposal at an annual or special meeting only pursuant to and in compliance with Rule 14a-8 under the Exchange Act, and such proposal has been included in a proxy statement that has been prepared by the Corporation to solicit proxies for such meeting.

(g) **Special Meetings of Stockholders.** Only such business shall be conducted at a special meeting of stockholders as has properly been brought before the meeting pursuant to the Corporation's notice of meeting. Nominations of persons for election to the Board of Directors may be made at a special meeting of stockholders at which directors are to be elected pursuant to the Corporation's notice of meeting (x) by or at the direction of the Board of Directors or any authorized committee thereof (or, in the case of a stockholder-requested special meeting, by any stockholder of the Corporation pursuant to, and in compliance with, Section 2.04 hereof) or (y) *provided* that the Board of Directors has determined that directors shall be elected at such meeting by any stockholder of the Corporation who is a stockholder of record at the time the notice provided for in this Section 2.03 is delivered to the secretary of the Corporation, who is entitled to vote at the meeting and upon such election and who delivers notice to the secretary at the principal executive offices of the Corporation not earlier than the Close of Business on the one hundred twentieth (120th) calendar day prior to the special meeting and not later than the Close of Business on the later of the ninetieth (90th) calendar day prior to the date of the special meeting or the tenth (10th) day following the date of Public Disclosure of the date of the special meeting and of the nominees proposed by the Board of Directors to be elected at such meeting. Such notice of a stockholder shall include the same information, representations, questionnaires, certifications and agreements that would be required if the stockholder were to make a nomination in connection with an annual meeting of stockholders pursuant to Section 2.03(c), including information required pursuant to Section 2.03(d) above, and such stockholder shall be obligated to provide the same supplemental or additional information in connection with a special meeting of stockholders as required pursuant to Section 2.03(c) in connection with an annual meeting of stockholders. For the avoidance of doubt, the number of nominees a stockholder may nominate for election at the special meeting (or in the case of a stockholder giving the notice on behalf of a beneficial owner, the number of nominees a stockholder may nominate for election at the special meeting on behalf of such beneficial owner) shall not exceed the number of directors to be elected at such special meeting. In no event shall an adjournment, recess or postponement of a special meeting commence a new notice time period (or extend any notice time period) for the giving of the stockholder's notice as described above.

(h) **Effect of Noncompliance.** Except as otherwise required by law, only such persons who are nominated in accordance with the procedures set forth in this Section 2.03 or Section 2.04 shall be eligible to be elected at any meeting of stockholders of the Corporation to serve as directors and only such other business shall be conducted at a meeting of stockholders as shall have been brought before the meeting in accordance with the procedures set forth in this Section 2.03. Notwithstanding any other provision of these Bylaws, a stockholder (and any beneficial owner on whose behalf a nomination is made or other business is proposed, and their Affiliates and Associates) shall also comply with all applicable requirements of the Exchange Act and the rules and regulations promulgated thereunder with respect to the matters set forth in

this Section 2.03 and Section 2.04, **as applicable; provided, however**, that any references in these Bylaws to the Exchange Act or the rules and regulations promulgated thereunder are not intended to and shall not limit any requirements applicable to nominations or proposals as to any other business to be considered pursuant to this Section 2.03 or Section 2.04. Without limiting any remedy available to the Corporation, a stockholder may not present nominations for director or business at a meeting of stockholders (and any such nominee shall be disqualified from standing for election or re-election), notwithstanding that votes and proxies in respect of such vote may have been received by the Corporation, if such stockholder, any beneficial owner (as applicable) or any nominee for director (as applicable) or any of their Affiliates and Associates, where applicable, acted contrary to any representation, certification or agreement required by this Article II, otherwise failed to comply with this Article II (or with any law, rule or regulation identified in this Article II) or provided false or misleading information to the Corporation (in each case, as determined by the chair of the meeting, the Board of Directors (or any authorized committee thereof) or any other person designated by the Board of Directors). If the stockholder (or a Qualified Representative of the stockholder) does not appear at the meeting to present the proposed business or nominations, such business or nominations shall not be considered, notwithstanding that votes and proxies in respect of such business or nominations may have been received by the Corporation. The chair of the meeting shall, in addition to making any other determination that may be appropriate for the conduct of the meeting, have the power and duty to determine whether a nomination or any business proposed to be brought before the meeting was made or proposed, as the case may be, in accordance with the procedures set forth in these Bylaws and/or complied with the requirements of Rule 14a-19 under the Exchange Act, and, if any proposed nomination or business is not in compliance with these Bylaws and/or with the requirements of Rule 14a-19 under the Exchange Act, except as otherwise required by law, the chair of the meeting shall declare that such defective proposal or nomination shall be disregarded, notwithstanding that votes and proxies in respect of such vote may have been received by the Corporation.

(i) **White Proxy Card.** Any stockholder directly or indirectly soliciting proxies from other stockholders must use a proxy card color other than white, which shall be reserved for the exclusive use for solicitation by the Board of Directors.

Section 2.4 Special Meetings.

(a) **Procedures.** Special meetings of stockholders for any purpose or purposes may be called only pursuant to a resolution approved by the Board of Directors or by the secretary of the Corporation at the request of one or more persons who, in the aggregate, own (as defined below) shares entitled to cast not less than twenty percent (20%) of the votes at the meeting at the time a special meeting request is delivered to the secretary of the Corporation, and such meeting shall be held at such place, if any, on such date, and at such time as the Board of Directors shall fix. The record date for the special meeting shall be fixed by the Board of Directors as set forth in Section 2.13 below. Except as otherwise required by law, and except as otherwise provided for or fixed pursuant to the Certificate of Incorporation (including any Preferred Stock Designation), special meetings of the stockholders of the Corporation may not be called by any other person or persons. Any such request for a special meeting shall be in writing,

setting forth the name and address of each person submitting the special meeting request (as they appear on the Corporation's books, if applicable), bearing the date of signature of each such person (or duly authorized agent) submitting the special meeting request, specifying the business (including the identity of nominees for election as a director, if any) proposed to be transacted or acted on at the meeting, providing documentary evidence that the requesting persons own the requisite percent as of the time the request is delivered (*provided, however,* that if the requesting persons are not the beneficial owners of the shares representing the requisite percent, then to be valid, the special meeting request must also include documentary evidence of the number of shares owned (as defined below) by the beneficial owners on whose behalf the special meeting request is made at the time the request is delivered) and including the same information, representations, certifications and agreements that would be required if the stockholder were to propose such business in connection with an annual meeting of stockholders pursuant to Section 2.03 with respect to any director nominations or other business proposed to be presented at the special meeting, and as to each person requesting the meeting and each other person (including any beneficial owner) on whose behalf the person is acting, other than persons who have provided such request solely in response to any form of public solicitation for such requests. Such request shall be delivered personally or sent by certified or registered mail, return receipt requested, to the secretary of the Corporation. Such stockholder shall be obligated to provide the same supplemental or additional information in connection with such special meeting as required pursuant to Section 2.03 in connection with an annual meeting of stockholders. In addition, the requesting person and each other person (including any beneficial owner) on whose behalf the person is acting, shall provide such other information as the Corporation may reasonably request within ten (10) business days of such a request. After receiving a special meeting request, the Board of Directors shall determine in good faith whether the persons requesting the special meeting have satisfied the requirements for calling a special meeting of stockholders, and the Corporation shall notify the requesting person of the Board's determination about whether the special meeting request is valid, which determination shall be conclusive and binding on the Corporation and all stockholders, in each case to the fullest extent permitted by law. The Board of Directors shall determine the time and place of such special meeting, which shall be held not less than thirty-five (35) nor more than one hundred twenty (120) calendar days after the date of the receipt of the request. Upon determination of the time and place of the meeting, the secretary shall cause notice to be given to the stockholders entitled to vote, in accordance with the provisions of Section 2.06 of these Bylaws. The only business that may be conducted at a special meeting shall be the matter or matters set forth in the notice of such meeting. Nothing contained in this Section 2.04 shall be construed as limiting, fixing, or affecting the time when a meeting of stockholders called by action of the Board of Directors may be held.

(b) **Revocation and Failure to Appear.** Any person who submitted a special meeting request may revoke its written request by written revocation delivered to the Secretary of the Corporation at the principal executive offices of the Corporation at any time prior to the stockholder-requested special meeting. A special meeting request shall be deemed revoked (and any meeting scheduled in response may be cancelled) if the persons submitting the special meeting request, and any beneficial owners on whose behalf they are acting (as applicable), do not continue to own (as defined below) at least the requisite percent at all times between the date the special meeting request is received by the Corporation and the date of the applicable

stockholder-requested special meeting, and the requesting person shall promptly notify the Secretary of any decrease in ownership of shares of stock of the Corporation that results in such a revocation. If, as a result of any revocations, there are no longer valid unrevoked written requests from the requisite percentage, the Board of Directors shall have the discretion to determine whether or not to proceed with the special meeting. Business transacted at a stockholder-requested special meeting shall be limited to: (i) the business stated in the valid special meeting request received from the requisite percent; and (ii) any additional business that the Board of Directors determines to include in the Corporation's notice of meeting. If none of the persons who submitted the special meeting request (or their Qualified Representatives, as defined in Section 2.03 above) appears at the special meeting to present the matter or matters to be brought before the special meeting that were specified in the special meeting request, the Corporation need not present the matter or matters for a vote at the meeting, notwithstanding that votes and proxies in respect of such vote may have been received by the Corporation. The Board of Directors may postpone, reschedule or cancel any special meeting of stockholders previously scheduled pursuant to this Section 2.04.

(c) **Limitations.** A special meeting request shall not be valid, and the Corporation shall not call a special meeting if: (i) the special meeting request relates to an item of business that is not a proper subject for stockholder action under, or that involves a violation of, applicable law; (ii) the special meeting request is delivered during the period commencing ninety (90) days prior to the first anniversary of the preceding year's annual meeting and ending on the date of the next annual meeting of stockholders; or (iii) the special meeting request does not comply with the requirements of this Section 2.04.

(d) **Definitions.** For purposes of satisfying the requisite ownership percentage under this Section 2.04: (i) a person is deemed to "own" only those outstanding shares of stock of the Corporation as to which such person possesses both: (A) the full voting and investment rights pertaining to the shares, and (B) the full economic interest in (including the opportunity for profit and risk of loss on) the shares, except that the number of shares calculated in accordance with the foregoing clauses (A) and (B) shall not include any shares: (1) sold by such person in any transaction that has not been settled or closed; (2) borrowed by the person for any purposes or purchased by the person pursuant to an agreement to resell; or (3) subject to any option, warrant, forward contract, swap, contract of sale, or other derivative or similar agreement entered into by the person, whether the instrument or agreement is to be settled with shares or with cash based on the notional amount or value of outstanding shares of stock of the Corporation, if the instrument or agreement has, or is intended to have, or if exercised would have, the purpose or effect of: (x) reducing in any manner, to any extent or at any time in the future, the person's full right to vote or direct the voting of the shares; and/or (y) hedging, offsetting or altering to any degree any gain or loss arising from the full economic ownership of the shares by the person. For purposes of the foregoing clauses (1)-(3), the term "person" includes its affiliates; and (ii) a person "owns" shares held in the name of a nominee or other intermediary so long as such person retains both: (A) the full voting and investment rights pertaining to the shares; and (B) the full economic interest in the shares. The person's ownership of shares is deemed to continue during any period in which the person has delegated any voting power by means of a proxy, power of attorney, or other instrument or arrangement that is revocable at any time by the person.

Section 2.5 Adjournments. Any meeting of the stockholders, annual or special, whether or not a quorum is present, may be adjourned or recessed by the chair of the meeting, for any or no reason from time to time, subject to any rules and regulations adopted by the Board of Directors. Any such meeting may be adjourned for any or no reason (and may be recessed if a quorum is not present or represented) from time to time by the holders of a majority of the voting power of the stock present in person or represented by proxy at the meeting and entitled to vote thereon. At the adjourned or recessed meeting, the Corporation may transact any business that may have been transacted at the original meeting.

Section 2.6 Notice of Meetings. Notice of the place, if any, date, hour, the record date for determining the stockholders entitled to vote at the meeting (if such date is different from the record date for stockholders entitled to notice of the meeting) and means of remote communication, if any, of every meeting of stockholders shall be given by the Corporation not less than ten (10) days nor more than sixty (60) days before such meeting (unless a different time is specified by law) to every stockholder entitled to vote at the meeting as of the record date for determining the stockholders entitled to notice of the meeting. Notices of special meetings shall also specify the purpose or purposes for which the meeting has been called. Except as otherwise provided herein or permitted by applicable law, notice to stockholders shall be in writing and delivered personally or mailed to the stockholders at their addresses appearing on the books of the Corporation. Without limiting the manner by which notice otherwise may be given effectively to stockholders, notice of meetings may be given to stockholders by means of electronic transmission in accordance with applicable law and shall be given in the manner required by the rules of the Securities and Exchange Commission to the extent the Corporation is subject to the Securities and Exchange Commission's proxy rules. Notice of any meeting need not be given to any stockholder who, either before or after the meeting, submits a waiver of notice or attends such meeting, except when the stockholder attends for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Any stockholder so waiving notice of such meeting shall be bound by the proceedings of any such meeting in all respects as if due notice thereof had been given.

When a meeting is adjourned to another time or place (including an adjournment taken to address a technical failure to convene or continue a meeting using remote communication), notice need not be given of the adjourned meeting if the place, if any, date and time thereof, and the means of remote communications, if any, by which stockholders and proxyholders may be deemed to be present in person and vote at such adjourned meeting are: (i) announced at the meeting at which the adjournment is taken; (ii) displayed, during the time scheduled for the meeting, on the same electronic network used to enable stockholders and proxyholders to participate in the meeting by means of remote communication; or (iii) set forth in the notice of meeting given in accordance with this Section 2.06; *provided, however,* that if the adjournment is for more than thirty (30) days, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting. If, after the adjournment, a new record date for stockholders entitled to vote is fixed for the adjourned meeting, the Board of Directors shall fix a new record date for notice of such adjourned meeting in accordance with Section 2.13.

and shall give notice of the adjourned meeting to each stockholder of record entitled to vote at such adjourned meeting as of the record date fixed for notice of such adjourned meeting.

Section 2.7 List of Stockholders. The Corporation shall prepare, no later than the tenth (10th) day before every meeting of stockholders, a complete list of the stockholders entitled to vote at any such meeting of stockholders (*provided, however*, if the record date for determining the stockholders entitled to vote is less than ten (10) days before the date of the meeting, the list shall reflect the stockholders entitled to vote as of the tenth (10th) day before the meeting date), arranged in alphabetical order, and showing the address of each stockholder and the number of shares of each class of capital stock of the Corporation registered in the name of each stockholder. Nothing in this Section 2.07 shall require the Corporation to include electronic mail addresses or other electronic contact information on such list. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for ten (10) days ending on the day before the meeting date, at the principal place of business of the Corporation, or on a reasonably accessible electronic network, *provided* that the information required to gain access to such list is provided with the notice of the meeting. In the event that the Corporation determines to make the list available on an electronic network, the Corporation may take reasonable steps to ensure that such information is available only to stockholders of the Corporation. Except as provided by applicable law, the stock ledger of the Corporation shall be the only evidence as to who are the stockholders entitled to examine the stock ledger and the list of stockholders or to vote in person or by proxy at any meeting of stockholders.

Section 2.8 Quorum. Unless otherwise required by law, the Certificate of Incorporation or these Bylaws, at each meeting of the stockholders, the holders of one-third of the voting power of all of the shares of the stock entitled to vote at the meeting, present in person or represented by proxy, shall constitute a quorum; *provided*, that where a separate vote by a class or series or classes or series of stock is required, the presence in person or by proxy of stockholders holding one-third of the voting power of the stock of such class or series or classes or series outstanding and entitled to vote thereon shall constitute a quorum entitled to take action with respect to such matter. If a quorum is not present or represented at any meeting of the stockholders, the stockholders entitled to vote thereat, present in person or represented by proxy, and the chair of the meeting, shall each have the power to adjourn the meeting from time to time, in the manner provided in Section 2.05, until a quorum is present or represented. A quorum, once established, shall not be broken by the subsequent withdrawal of enough votes to leave less than a quorum. At any such adjourned meeting at which there is a quorum, any business may be transacted that may have been transacted at the meeting originally called.

Section 2.9 Conduct of Meetings. The Board of Directors of the Corporation may adopt by resolution such rules and regulations for the conduct of the meeting of the stockholders as it deems appropriate. At every meeting of stockholders, if the Board of Directors has not appointed a different chair for the meeting, the chief executive officer or, in his or her absence or inability to act, the secretary or, in his or her absence or inability to act, the person whom the chief executive officer appoints, shall act as chair of, and preside at, the meeting. The secretary or, in his or her absence or inability to act, the person whom the chair of the meeting appoints

secretary of the meeting, shall act as secretary of the meeting and keep the minutes thereof. Except to the extent inconsistent with such rules and regulations as adopted by the Board of Directors, the chair of any meeting of the stockholders has the right and authority to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chair, are appropriate for the proper conduct of the meeting. Such rules, regulations or procedures, whether adopted by the Board of Directors or prescribed by the chair of the meeting, may include, without limitation, the following: (a) the establishment of an agenda or order of business for the meeting; (b) the determination of when the polls open and close for any given matter to be voted on at the meeting; (c) rules and procedures for maintaining order at the meeting and the safety of those present; (d) limitations on attendance at or participation in the meeting to stockholders of record of the Corporation, their duly authorized and constituted proxies or qualified representatives (including rules around who qualifies as such) or such other persons as the chair of the meeting determines; (e) restrictions on entry to the meeting after the time fixed for the commencement thereof; (f) limitations on the time allotted to questions or comments by participants; and (g) procedures (if any) requiring attendees to provide the Corporation advance notice of their intent to attend the meeting. The chair of the meeting, in addition to making any other determinations that may be appropriate to the conduct of the meeting, shall declare that a nomination or other business was not properly brought before the meeting if the facts warrant (including if a determination is made that a nomination or other business was not made or proposed, as the case may be, in accordance with Section 2.03 of these Bylaws), and if such chair should so declare, such nomination shall be disregarded or such other business shall not be transacted.

Section 2.10 Voting; Proxies. Unless otherwise required by the Certificate of Incorporation, at any meeting of stockholders at which directors are to be elected, directors shall be elected by a plurality of the votes cast. Unless otherwise required by law, the Certificate of Incorporation or the rules of any stock exchange on which the Corporation's securities are listed, all other matters presented to the stockholders at a meeting at which a quorum is present shall be determined by a majority of the votes cast affirmatively or negatively. Each stockholder entitled to vote at a meeting of stockholders or to express consent to corporate action without a meeting may authorize another person or persons to act for such stockholder by proxy, but no such proxy shall be voted or acted upon after three years from its date, unless the proxy provides for a longer period. A proxy shall be irrevocable if it states that it is irrevocable and if, and only as long as, it is coupled with an interest sufficient in law to support an irrevocable power. A stockholder may revoke any proxy that is not irrevocable by attending the meeting and voting in person or by delivering to the secretary of the Corporation a revocation of the proxy or a new proxy bearing a later date. Voting at meetings of stockholders need not be by written ballot.

Section 2.11 Inspectors at Meetings of Stockholders. The Board of Directors, in advance of any meeting of stockholders, may, and shall if required by law, appoint one or more inspectors, who may be employees of the Corporation, to act at the meeting or any postponement or adjournment thereof and make a written report thereof. The Board of Directors may designate one or more persons as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting, the person presiding at the meeting shall appoint one or more inspectors to act at the meeting. Each inspector, before entering upon the discharge

of his or her duties, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors shall (a) ascertain the number of shares outstanding and the voting power of each, (b) determine the shares represented at the meeting, the existence of a quorum and the validity of proxies and ballots, (c) count all votes and ballots, (d) determine and retain for a reasonable period a record of the disposition of any challenges made to any determination by the inspectors and (e) certify their determination of the number of shares represented at the meeting and their count of all votes and ballots. The inspectors may appoint or retain other persons or entities to assist the inspectors in the performance of their duties. Unless otherwise provided by the Board of Directors, the date and time of the opening and the closing of the polls for each matter upon which the stockholders will vote at a meeting shall be announced at the meeting. No ballot, proxies, votes or any revocation thereof or change thereto, shall be accepted by the inspectors after the closing of the polls unless the Court of Chancery of the State of Delaware upon application by a stockholder determines otherwise. In determining the validity and counting of proxies and ballots cast at any meeting of stockholders, the inspectors may consider such information as is permitted by applicable law. No person who is a candidate for office at an election may serve as an inspector at such election.

Section 2.12 Consent of Stockholders Without a Meeting Any action to be taken at any annual or special meeting of stockholders may be taken without a meeting, without prior notice and without a vote, if a consent or consents setting forth the action to be so taken are signed by all of the holders of outstanding stock entitled to vote with respect to the subject matter thereof and delivered to the Corporation in accordance with the Delaware General Corporation Law.

Section 2.13 Fixing the Record Date.

(a) In order that the Corporation may determine the stockholders entitled to notice of or to vote at any meeting of stockholders or any adjournment or postponement thereof, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall not be more than sixty (60) nor less than ten (10) calendar days before the date of such meeting. If the Board of Directors so fixes a date, such date shall also be the record date for determining the stockholders entitled to vote at such meeting unless the Board of Directors determines, at the time it fixes such record date, that a later date on or before the date of the meeting shall be the date for making such determination. If no record date is fixed by the Board of Directors, the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment or postponement of the meeting; *provided, however,* that the Board of Directors may fix a new record date for the determination of stockholders entitled to vote at the adjourned or postponed meeting and in such case shall also fix as the record date for stockholders entitled to notice of such adjourned or

postponed meeting the same or an earlier date as that fixed for the determination of stockholders entitled to vote herewith at the adjourned or postponed meeting.

(b) In order that the Corporation may determine the stockholders entitled to express consent to corporate action without a meeting, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall not be more than ten (10) calendar days after the date upon which the resolution fixing the record date is adopted by the Board of Directors. If no record date has been fixed by the Board of Directors, the record date for determining stockholders entitled to express consent to corporate action without a meeting: (i) when no prior action by the Board of Directors is required by law, the record date for such purpose shall be the first date on which a signed consent setting forth the action taken or proposed to be taken is delivered to the Corporation in accordance with the Delaware General Corporation Law and (ii) if prior action by the Board of Directors is required by law, the record date for such purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution taking such prior action.

(c) In order that the Corporation may determine the stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights or the stockholders entitled to exercise any rights in respect of any change, conversion or exchange of stock, or for the purpose of any other lawful action, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted, and which record date shall be not more than sixty (60) calendar days prior to such action. If no record date is fixed, the record date for determining stockholders for any such purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

ARTICLE III BOARD OF DIRECTORS

Section 3.1 General Powers. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors. The Board of Directors may adopt such rules and procedures, not inconsistent with the Certificate of Incorporation, these bylaws or applicable law, as it may deem proper for the conduct of its meetings and the management of the Corporation.

Section 3.2 Number; Term of Office. The Board of Directors shall consist of no less than one (1) or more than fifteen (15) members, the number thereof to be determined from time to time by resolution of the Board of Directors. Each director shall hold office until a successor is duly elected and qualified or until the director's earlier death, resignation, disqualification or removal. The Board of Directors, in its discretion, may elect a chair (who must be a director) and one or more vice chairmen (who must be directors).

Section 3.3 Newly Created Directorships and Vacancies. Any newly created directorships resulting from an increase in the authorized number of directors and any vacancies occurring in the Board of Directors may be filled by the affirmative votes of a majority of the remaining members of the Board of Directors, although less than a quorum. A director so elected shall hold office until the earlier of the expiration of the term of office of the director whom he or she has replaced, a successor is duly elected and qualified or the earlier of such director's death, resignation or removal. If the votes cast opposing the election of an incumbent director nominee in an uncontested election of a director exceed the votes cast favoring such election at a meeting of the Corporation's stockholders, the majority of the disinterested independent members of the Board of Directors may (a) request such director nominee to immediately tender his or her resignation as a director of the Corporation, (b) reduce the size of the Board of Directors upon the occurrence of the resulting vacancy and (c) take any other action regarding the resulting vacancy as such independent directors deem necessary or appropriate.

Section 3.4 Resignation. Any director may resign at any time by notice given in writing or by electronic transmission to the Corporation. Such resignation shall take effect at the date of receipt of such notice by the Corporation or at such later time as is therein specified.

Section 3.5 Regular Meetings. Regular meetings of the Board of Directors may be held without notice at such times and at such places, if any, as may be determined from time to time by the Board of Directors or its chair.

Section 3.6 Special Meetings. Special meetings of the Board of Directors may be called, and may be held at such times and at such places, if any, as may be determined, by the chair or the chief executive officer (if separate) or a majority of the directors then in office on at least twenty-four (24) hours' notice to each director given by one of the means specified in Section 3.09 hereof other than by mail or on at least three (3) calendar days' notice if given by mail. A notice of special meeting need not state the purpose of such meeting, and, unless indicated in the notice thereof, any and all business may be transacted at a special meeting.

Section 3.7 Meetings by Means of Remote Communication. Board of Directors or Board of Directors committee meetings may be held by means of telephone conference or other communications equipment by means of which all persons participating in the meeting can hear each other and be heard. Participation by a director in a meeting pursuant to this Section 3.07 shall constitute presence in person at such meeting.

Section 3.8 Adjourned Meetings. A majority of the directors present at any meeting of the Board of Directors, including an adjourned meeting, whether or not a quorum is present, may adjourn and reconvene such meeting to another time and place. At least twenty-four (24) hours' notice of any adjourned or postponed meeting of the Board of Directors shall be given to each director whether or not present at the time of the adjournment or postponement, if such notice shall be given by one of the means specified in Section 3.09 hereof other than by mail, or at least three (3) calendar days' notice if by mail. Any business may be transacted at an adjourned meeting that could have been transacted at the meeting as originally called.

Section 3.9 Notices. Subject to Section 3.06 and Section 3.10 hereof, whenever notice is required to be given to any director by applicable law, the Certificate of Incorporation or these bylaws, such notice shall be deemed given effectively if given in person or by telephone, mail addressed to such director at such director's address as it appears on the records of the Corporation, email or by other means of electronic transmission.

Section 3.10 Waiver of Notice. Whenever the giving of any notice to directors is required by applicable law, the Certificate of Incorporation or these bylaws, a waiver thereof, given by the director entitled to the notice, whether before or after such notice is required, shall be deemed equivalent to notice. Attendance by a director at a meeting shall constitute a waiver of notice of such meeting except when the director attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business on the ground that the meeting was not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special Board of Directors or committee meeting need be specified in any waiver of notice.

Section 3.11 Organization. At each meeting of the Board of Directors, the chair or, in his or her absence, another director selected by the Board of Directors shall preside. The secretary or a person designated by the secretary shall act as secretary at each meeting of the Board of Directors. If the secretary is absent from any meeting of the Board of Directors, an assistant secretary shall perform the duties of secretary at such meeting; and in the absence from any such meeting of the secretary and all assistant secretaries, the person presiding at the meeting may appoint any person to act as secretary of the meeting.

Section 3.12 Quorum of Directors. The presence of a majority of the total number of authorized directors (whether or not there exist any vacancies in previously authorized directorships) shall be necessary and sufficient to constitute a quorum for the transaction of business at any meeting of the Board of Directors.

Section 3.13 Action by Majority Vote. Except as otherwise expressly required by these bylaws, the Certificate of Incorporation or by applicable law, the vote of a majority of the directors present at a meeting at which a quorum is present shall be an act of the Board of Directors.

Section 3.14 Action Without Meeting. Unless otherwise restricted by the Certificate of Incorporation or these bylaws, any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting if all directors or members of such committee, as the case may be, consent thereto in writing or by electronic transmission. Following such action, the writings or electronic transmissions shall be filed with the minutes of proceedings of the Board of Directors or committee in accordance with applicable law.

Section 3.15 Committees of the Board of Directors. The Board of Directors may designate one (1) or more committees, each committee to consist of one (1) or more of the directors of the Corporation. The Board of Directors may designate one (1) or more directors as alternate members of any committee, who may replace any absent or disqualified member at any

meeting of such committee. If a member of a committee is absent from any meeting, or disqualified from voting thereat, the remaining member or members present at the meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may, by a unanimous vote, appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member. Any such committee, to the extent permitted by applicable law, shall have and may exercise all the powers and authority of the Board of Directors in the management of the business and affairs of the Corporation and may authorize the seal of the Corporation to be affixed to all papers that may require it to the extent so authorized by the Board of Directors. Unless the Board of Directors provides otherwise, at all meetings of such committee, a majority of the then-authorized members of the committee shall constitute a quorum for the transaction of business, and the vote of a majority of the members of the committee present at any meeting at which there is a quorum shall be an act of the committee. Each committee shall keep regular minutes of its meetings. Unless the Board of Directors provides otherwise, each committee designated by the Board of Directors may make, alter and repeal rules and procedures for the conduct of its business. In the absence of such rules and procedures each committee shall conduct its business in the same manner as the Board of Directors conducts its business pursuant to this Article III.

ARTICLE IV OFFICERS

Section 4.1 Positions and Election. The officers of the Corporation shall be elected by the Board of Directors and shall include a chief executive officer and a secretary. The Board of Directors, in its discretion, may also elect one (1) or more vice presidents, a treasurer, assistant treasurers, assistant secretaries and other officers. Any individual may be elected to, and may hold, more than one office of the Corporation and any office may be left vacant at the discretion of the Board of Directors.

Section 4.2 Term. Each officer of the Corporation shall hold office until such officer's successor is elected and qualifies or until such officer's earlier death, resignation or removal. Any officer elected or appointed by the Board of Directors may be removed by the Board of Directors at any time with or without cause by the majority vote of the members of the Board of Directors then in office. The removal of an officer shall be without prejudice to his or her contract rights, if any. The election or appointment of an officer does not of itself create contract rights. Any officer of the Corporation may resign at any time by giving written notice of his or her resignation to the chief executive officer or the secretary. Any such resignation shall take effect at the time specified therein or, if the time when it becomes effective is not specified therein, immediately upon its receipt. Unless otherwise specified therein, the acceptance of such resignation is not necessary to make it effective. If any vacancy occurs among the officers, the Board of Directors shall, if required by law, or may appoint a person to fill the position for the unexpired portion of the term or leave the office vacant.

Section 4.3 The Chief Executive Officer. The chief executive officer shall have general supervision over the business of the Corporation and other duties incident to the office of chief executive officer, and any other duties as may from time to time be assigned to the chief

executive officer by the Board of Directors and subject to the control of the Board of Directors in each case. Unless otherwise directed by the Board of Directors, the chief executive officer or any officer of the Corporation authorized by the chief executive officer, shall have power to vote and otherwise act on behalf of the Corporation, in person or by proxy, at any meeting of stockholders or with respect to any action of security holders of any other entity in which the Corporation may hold securities and otherwise to exercise any and all rights and powers which this Corporation may possess by reason of its ownership of securities in such other entity.

Section 4.4 Vice Presidents. Each vice president shall have such powers and perform such duties as may be assigned to him or her from time to time by the chair of the Board of Directors or the chief executive officer.

Section 4.5 The Secretary. The secretary, or a person appointed by the secretary, chief executive officer or Board of Directors, shall attend all sessions of the Board of Directors and all meetings of the stockholders and record all votes and the minutes of all proceedings in a book to be kept for that purpose, and shall perform like duties for committees when required. He or she shall give, or cause to be given, notice of all meetings of the stockholders and meetings of the Board of Directors, and shall perform such other duties as may be prescribed by the Board of Directors or the chief executive officer. The secretary shall keep in safe custody the seal of the Corporation and shall see that it is affixed to all documents, the execution of which, on behalf of the Corporation, under its seal, is necessary or proper, and when so affixed may attest the same.

Section 4.6 The Treasurer. The treasurer shall have custody of the corporate funds and securities, except as otherwise provided by the Board of Directors, and shall cause to be kept full and accurate accounts of receipts and disbursements in books belonging to the Corporation and shall deposit all moneys and other valuable effects in the name and to the credit of the Corporation in such depositories as may be designated by the Board of Directors. The treasurer shall disburse the funds of the Corporation as may be ordered by the Board of Directors, taking proper vouchers for such disbursements, and shall render to the chief executive officer and the directors, at the regular meetings of the Board of Directors, or whenever they may require it, an account of all his or her transactions as treasurer and of the financial condition of the Corporation.

Section 4.7 Additional Matters. The Corporation shall have the authority to designate employees of the Corporation to have the title of Vice President, Assistant Vice President, Assistant Treasurer or Assistant Secretary. Any employee so designated shall have the powers and duties determined by the officer making such designation. The persons upon whom such titles are conferred shall not be deemed officers of the Corporation unless elected by the Board of Directors.

Section 4.8 Duties of Officers May Be Delegated In the case of absence of any officer, or for any other reason that the Board of Directors may deem sufficient, the chief executive officer or the Board of Directors may delegate for the time being the powers or duties of such officer to any other officer, director or person.

ARTICLE V STOCK CERTIFICATES AND THEIR TRANSFER

Section 5.1 Certificates Representing Shares. The shares of stock of the Corporation shall be represented by certificates unless the Board of Directors provides by resolution or resolutions that some or all of any class or series shall be uncertificated shares that may be evidenced by a book-entry system maintained by the registrar of such stock. If shares are represented by certificates, such certificates shall be in the form approved by the Board of Directors. The certificates representing shares of stock of each class shall be signed by any two (2) authorized officers of the Corporation, including the chief executive officer and secretary. Any or all such signatures may be electronic signatures. Although any officer, transfer agent or registrar whose manual or electronic signature is affixed to such a certificate ceases to be such officer, transfer agent or registrar before such certificate has been issued, it may nevertheless be issued by the Corporation with the same effect as if such officer, transfer agent or registrar were still such at the date of its issue.

Section 5.2 Transfers of Stock. Stock of the Corporation shall be transferable in the manner prescribed by law and in these bylaws. Transfers of stock shall be made on the books of the Corporation only by the person named as the holder thereof on the stock records of the Corporation, by such person's attorney lawfully constituted in writing, and in the case of shares represented by a certificate upon the surrender of the certificate thereof, which shall be cancelled before a new certificate or uncertificated shares may be issued. No transfer of stock shall be valid as against the Corporation for any purpose until it has been entered in the stock records of the Corporation by an entry showing from and to whom such stock was transferred. To the extent designated by the chief executive officer or any vice president or the treasurer of the Corporation, the Corporation may recognize the transfer of fractional uncertificated shares, but shall not otherwise be required to recognize the transfer of fractional shares.

Section 5.3 Transfer Agents and Registrars. The Board of Directors may appoint, or authorize any officer or officers to appoint, one (1) or more transfer agents and one or more registrars.

Section 5.4 Lost, Stolen or Destroyed Certificates. The Board of Directors may direct a new certificate or uncertificated shares to be issued in place of any certificate theretofore issued by the Corporation alleged to have been lost, stolen or destroyed upon the making of an affidavit of that fact by the person claiming the certificate of stock to be lost, stolen or destroyed. When authorizing such issue of a new certificate or uncertificated shares, the Board of Directors may, in its discretion and as a condition precedent to the issuance thereof, require the owner of such lost, stolen or destroyed certificate, or the owner's legal representative to give the Corporation a bond sufficient to indemnify it against any claim that may be made against the Corporation with respect to the certificate alleged to have been lost, stolen or destroyed or the issuance of such new certificate or uncertificated shares.

ARTICLE VI GENERAL PROVISIONS

Section 6.1 Seal. The seal of the Corporation, if any, shall be in such form as is approved by the Board of Directors. The seal may be used by causing it or an electronic reproduction thereof to be impressed, affixed, reproduced or otherwise, as may be prescribed by law or custom or by the Board of Directors.

Section 6.2 Fiscal Year. The fiscal year of the Corporation shall be determined by the Board of Directors.

Section 6.3 Checks, Notes, Drafts, Etc. All checks, notes, drafts or other orders for the payment of money of the Corporation shall be signed, endorsed or accepted in the name of the Corporation by such officer, officers, person or persons as from time to time may be designated by the Board of Directors or by an officer or officers authorized by the Board of Directors to make such designation.

Section 6.4 Dividends. Subject to applicable law and the Certificate of Incorporation, dividends upon the shares of capital stock of the Corporation may be declared by the Board of Directors at any regular or special meeting of the Board of Directors. Dividends may be paid in cash, in property or in shares of stock of the Corporation, unless otherwise provided by applicable law or the Certificate of Incorporation.

Section 6.5 Conflict with Applicable Law or Certificate of Incorporation. These bylaws are adopted subject to any applicable law and the Certificate of Incorporation. Whenever these bylaws may conflict with any applicable law or the Certificate of Incorporation, such conflict shall be resolved in favor of such law or the Certificate of Incorporation.

ARTICLE VII INDEMNIFICATION

Section 7.1 Power to Indemnify in Actions, Suits or Proceedings Other Than Those by or in the Right of the Corporation. Subject to Section 7.03, the Corporation shall indemnify, to the fullest extent permitted by applicable law, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Corporation), by reason of the fact that such person is or was a director or officer of the Corporation, or is or was a director or officer of the Corporation serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of

itself, create a presumption that the person did not act in good faith and in a manner which such person reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal action or proceeding, had reasonable cause to believe that such person's conduct was unlawful.

Section 7.2 Power to Indemnify in Actions, Suit or Proceedings by or in the Right of the Corporation

Subject to Section 7.03, the Corporation shall indemnify, to the fullest extent permitted by applicable law, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Corporation to procure a judgment in its favor by reason of the fact that such person is or was a director or officer of the Corporation, or is or was a director or officer of the Corporation serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Corporation; except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the Corporation unless and only to the extent that the Court of Chancery of the State of Delaware or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Section 7.3 Authorization of Indemnification. Any indemnification under this Article VII (unless ordered by a court) shall be made by the Corporation only as authorized in the specific case upon a determination that indemnification of the present or former director or officer is proper in the circumstances because such person has met the applicable standard of conduct set forth in Section 7.01 or Section 7.02, as the case may be. Such determination shall be made, with respect to a person who is a director or officer at the time of such determination, (i) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, or (ii) by a committee of such directors designated by a majority vote of such directors, even though less than a quorum, or (iii) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, or (iv) by the stockholders. Such determination shall be made, with respect to former directors and officers, by any person or persons having the authority to act on the matter on behalf of the Corporation. To the extent, however, that a present or former director or officer of the Corporation has been successful on the merits or otherwise in defense of any action, suit or proceeding described above, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith, without the necessity of authorization in the specific case.

Section 7.4 Good Faith Defined. For purposes of any determination under Section 7.03, a person shall be deemed to have acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Corporation, or, with respect to any criminal action or proceeding, to have had no reasonable cause to believe such

person's conduct was unlawful, if such person's action is based on the records or books of account of the Corporation or another enterprise, or on information supplied to such person by the officers of the Corporation or another enterprise in the course of their duties, or on the advice of legal counsel for the Corporation or another enterprise or on information or records given or reports made to the Corporation or another enterprise by an independent certified public accountant or by an appraiser or other expert selected with reasonable care by the Corporation or another enterprise. The provisions of this Section 7.04 shall not be deemed to be exclusive or to limit in any way the circumstances in which a person may be deemed to have met the applicable standard of conduct set forth in Section 7.01 or Section 7.02, as the case may be.

Section 7.5 Indemnification by a Court. Notwithstanding any contrary determination in the specific case under Section 7.03, and notwithstanding the absence of any determination thereunder, any director or officer may apply to the Court of Chancery of the State of Delaware or any other court of competent jurisdiction in the State of Delaware for indemnification (following the final disposition of such action, suit or proceeding) to the extent otherwise permissible under Section 7.01 or Section 7.02 or for advancement of expenses to the extent otherwise permissible under Section 7.06. The basis of such indemnification by a court shall be a determination by such court that indemnification of the director or officer is proper in the circumstances because such person has met the applicable standard of conduct set forth in Section 7.01 or Section 7.02, as the case may be. Neither a contrary determination in the specific case under Section 7.03 nor the absence of any determination thereunder shall be a defense to such application or create a presumption that the director or officer seeking indemnification has not met any applicable standard of conduct. Notice of any application for indemnification or advancement of expenses pursuant to this Section 7.05 shall be given to the Corporation promptly upon the filing of such application. If successful, in whole or in part, the director or officer seeking indemnification or advancement of expenses shall also be entitled to be paid the expense of prosecuting such application to the fullest extent permitted by applicable law.

Section 7.6 Expenses Payable in Advance. Expenses (including attorneys' fees) incurred by a present or former director or officer in defending any civil, criminal, administrative or investigative action, suit or proceeding shall, to the fullest extent not prohibited by applicable law, be paid by the Corporation in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that such person is not entitled to be indemnified by the Corporation as authorized in this Article VII. Such expenses (including attorneys' fees) incurred by former directors and officers or other employees and agents may be so paid upon such terms and conditions, if any, as the Corporation deems appropriate.

Section 7.7 Nonexclusively of Indemnification and Advancement of Expenses. The indemnification and advancement of expenses provided by, or granted pursuant to, this Article VII shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under the certificate of incorporation, these bylaws, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity.

while holding such office, it being the policy of the Corporation that indemnification of the persons specified in Section 7.01 and Section 7.02 shall be made to the fullest extent permitted by law. The provisions of this Article VII shall not be deemed to preclude the indemnification of any person who is not specified in Section 7.01 or Section 7.02 but whom the Corporation has the power or obligation to indemnify under the provisions of the General Corporation Law of the State of Delaware, or otherwise.

Section 7.8 Insurance. The Corporation may purchase and maintain insurance on behalf of any person who is or was a director or officer of the Corporation, or is or was a director or officer of the Corporation serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the Corporation would have the power or the obligation to indemnify such person against such liability under the provisions of this Article VII.

Section 7.9 Certain Definitions. For purposes of this Article VII, references to "the Corporation" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its directors or officers, so that any person who is or was a director or officer of such constituent corporation, or is or was a director or officer of such constituent corporation serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, shall stand in the same position under the provisions of this Article VII with respect to the resulting or surviving corporation as such person would have with respect to such constituent corporation if its separate existence had continued. The term "another enterprise" as used in this Article VII shall mean any other corporation or any partnership, joint venture, trust, employee benefit plan or other enterprise of which such person is or was serving at the request of the Corporation as a director, officer, employee or agent. For purposes of this Article VII, references to "fines" shall include any excise taxes assessed on a person with respect to an employee benefit plan; and references to "serving at the request of the Corporation" shall include any service as a director or officer of the Corporation which imposes duties on, or involves services by, such director or officer with respect to an employee benefit plan, its participants or beneficiaries; and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner "not opposed to the best interests of the Corporation" as referred to in this Article VII. The term "officer" of the Corporation" as used in this Article VII means an officer as defined by Section 102(b)(7) of the Delaware General Corporation Law and/or a person who is appointed as an officer by the Board of Directors.

Section 7.10 Survival of Indemnification and Advancement of Expenses. The indemnification and advancement of expenses provided by, or granted pursuant to, this Article VII shall, unless otherwise provided when authorized or ratified, continue as to a person who has

ceased to be a director or officer and shall inure to the benefit of the heirs, executors and administrators of such a person.

Section 7.11 Limitation on Indemnification. Notwithstanding anything contained in this Article VII to the contrary, except for proceedings to enforce rights to indemnification and to advancement of expenses (which shall be governed by Section 7.05), the Corporation shall not be obligated to indemnify any director or officer (or his or her heirs, executors or personal or legal representatives) or advance expenses in connection with a proceeding (or part thereof) initiated by such person unless such proceeding (or part thereof) was authorized or consented to by the Board of Directors.

Section 7.12 Indemnification of Employees and Agents. The Corporation may, to the extent authorized from time to time by the Board of Directors, provide rights to indemnification and to the advancement of expenses to employees and agents of the Corporation similar to those conferred in this Article VII to directors and officers of the Corporation.

Section 7.13 Other Sources. The Corporation's obligation, if any, to indemnify or to advance expenses to any director or officer who was or is serving at its request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise shall be reduced by any amount such director or officer may collect as indemnification or advancement of expenses from such other corporation, partnership, joint venture, trust or other enterprise.

Section 7.14 Amendment or Repeal. Any right to indemnification or to advancement of expenses of any director or officer arising hereunder shall not be eliminated or impaired by an amendment to or repeal of these bylaws after the occurrence of the act or omission that is the subject of the action, suit or proceeding for which indemnification or advancement of expenses is sought.

ARTICLE VIII AMENDMENTS

These bylaws may be amended, altered, changed, adopted and repealed or new bylaws adopted by the Board of Directors. The stockholders may make additional bylaws and may alter and repeal any bylaws whether such bylaws were originally adopted by them or otherwise only to the extent required or permitted by the Certificate of Incorporation.

Pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as Amended

I, Robert Rasmus, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 8, 2023

/s/ Robert Rasmus

Robert Rasmus

Chief Executive Officer

(Principal Executive Officer)

Pursuant to Rules 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as Amended

I, Stacia Hansen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 8, 2023

/s/ Stacia Hansen

Stacia Hansen

Chief Accounting Officer

(Principal Financial Officer)

Certification

Pursuant to

18 U.S.C. Section 1350,

as Adopted Pursuant to

Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Quarterly Report on Form 10-Q of Advanced Emissions Solutions, Inc. (the "Company") for the quarterly period ended September 30, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Robert Rasmus, as the Principal Executive Officer of the Company, and Stacia Hansen, as the Principal Financial Officer of the Company, each hereby certifies, pursuant to and solely for the purpose of 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, to the best of his knowledge and belief, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Robert Rasmus

Robert Rasmus

Chief Executive Officer

November 8, 2023

/s/ Stacia Hansen

Stacia Hansen

Chief Accounting Officer

November 8, 2023

Mine Safety and Health Administration Safety Data

We are committed to maintaining a safe work environment and working to ensure environmental compliance across all of our operations. The health and safety of our employees and limiting the impact to communities in which we operate are critical to our long-term success. We employ practices and conduct training to help ensure that our employees work safely. Furthermore, we utilize processes for managing, monitoring and improving safety and environmental performance.

The following disclosures are provided pursuant to Securities and Exchange Commission (SEC) regulations, which require certain disclosures by companies required to file periodic reports under the Securities Exchange Act of 1934, as amended, that operate coal mines regulated under the Federal Mine Safety and Health Act of 1977 (the "Mine Act"). The disclosures reflect United States (U.S.) mining operations only.

Mine Safety Information. Whenever the Mine Safety and Health Administration (MSHA) believes that a violation of the Mine Act, any health or safety standard, or any regulation has occurred, it may issue a violation which describes the associated condition or practice and designates a time frame within which the operator must abate the violation. In some situations, such as when MSHA believes that conditions pose a hazard to miners, MSHA may issue an order removing miners from the area of the mine affected by the condition until hazards are corrected. Whenever MSHA issues a citation or order, it generally proposes a civil penalty, or fine, as a result of the violation that the operator is ordered to pay. Citations and orders can be contested and appealed and, as part of that process, are often reduced in severity and amount, and are sometimes vacated. The number of citations, orders and proposed assessments vary depending on the size and type (underground or surface) of the company and mine.

We are required to report citations and orders issued to us by MSHA during the three months ended September 30, 2023, as reflected in our systems. Our required disclosure covers only those mines that were issued orders or citations during the period presented and, commensurate with SEC regulations, does not reflect orders or citations issued to independent contractors working at our mines. Due to timing and other factors, our data may not agree with the mine data retrieval system maintained by MSHA. The proposed assessments for the three months ended September 30, 2023 were taken from the MSHA system as of November 3, 2023.

Additional information about MSHA references we are required to report is as follows:

- *Section 104 S&S Violations:* The total number of violations received from MSHA under section 104(a) of the Mine Act that could significantly and substantially contribute to a serious injury if left unabated.
- *Section 104(b)Orders:* The total number of orders issued by MSHA under section 104(b) of the Mine Act, which represents a failure to abate a citation under section 104(a) within the period of time prescribed by MSHA. This results in an order of immediate withdrawal from the area of the mine affected by the condition until MSHA determines that the violation has been abated.
- *Section 104(d) Citations and Orders :* The total number of citations and orders issued by MSHA under section 104(d) of the Mine Act for unwarrantable failure to comply with mandatory health or safety standards.
- *Section 104(e) Notices:* The total number of notices issued by MSHA under section 104(e) of the Mine Act for a pattern of violations that could contribute to mine health or safety hazards.
- *Section 110(b)(2)Violations:* The total number of flagrant violations issued by MSHA under section 110(b)(2) of the Mine Act.
- *Section 107(a) Orders:* The total number of orders issued by MSHA under section 107(a) of the Mine Act for situations in which MSHA determined an imminent danger existed.
- *Proposed MSHA Assessments:* The total dollar value of proposed assessments from MSHA.
- *Fatalities:* The total number of mining-related fatalities.

Our first mine is located in the Gulf Coast Lignite Region, in Natchitoches Parish, Louisiana (the "Five Forks Mine"). For the three months ended September 30, 2023, there were no reportable citations or orders issued to the Five Forks Mine. Our second mine is located in Knox, Kentucky ("Corbin Project"). For the three months ended September 30, 2023, there were no reportable citations or orders issued to Corbin Project. Our third mine is located in Mingo, West Virginia ("Mine Four"). For the three months ended September 30, 2023, there were no reportable citations or orders issued to Mine Four.

Pending Legal Actions. The Federal Mine Safety and Health Review Commission (the Commission) is an independent adjudicative agency that provides administrative trial and appellate review of legal disputes arising under the Mine Act. These cases may involve, among other questions, challenges by operators to citations, orders and penalties they have received from MSHA, or complaints of discrimination by miners under section 105 of the Mine Act. The following is a brief description of the types of legal actions that may be brought before the Commission.

- *Contests of Citations and Orders* : A contest proceeding may be filed with the Commission by operators, miners or miners' representatives to challenge the issuance of a citation or order issued by MSHA, including citations related to disputed provisions of operators' emergency response plans.
- *Contests of Proposed Penalties (Petitions for Assessment of Penalties)* : A contest of a proposed penalty is an administrative proceeding before the Commission challenging a civil penalty that MSHA has proposed for the violation. Such proceedings may also involve appeals of judges' decisions or orders to the Commission on proposed penalties, including petitions for discretionary review and review by the Commission on its own motion.
- *Complaints for Compensation*: A complaint for compensation may be filed with the Commission by miners entitled to compensation when a mine is closed by certain withdrawal orders issued by MSHA. The purpose of the proceeding is to determine the amount of compensation, if any, due miners idled by the orders.
- *Complaints of Discharge, Discrimination or Interference* : A discrimination proceeding is a case that involves a miner's allegation that he or she has suffered a wrong by the operator because he or she engaged in some type of activity protected under the Mine Act, such as making a safety complaint. This category includes temporary reinstatement proceedings, which involve cases in which a miner has filed a complaint with MSHA stating he or she has suffered discrimination and the miner has lost his or her position.
- *Applications for Temporary Relief*: An application for temporary relief from any modification or termination of any order or from any order issued under certain subparts of section 104 of the Mine Act may be filed with the Commission at any time before such order becomes final.
- *Appeals of Judges' Decisions or Orders*.

For the three months ended September 30, 2023, there were no pending or legal actions before the Commission at Five Forks Mine, Corbin Project or Mine Four.